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STATE LICENSURE APPLIED TO LABORATORIANS *

JOHN A. KOLMER, M.D. D.Sc.

Professor of Pathology and Bacteriology, Graduate School of Medicine of the University of Pennsylvania

PHILADELPHIA

A progressive development of laboratory methods for the study and diagnosis of disease and a rapid multiplication of hospitals, diagnostic clinics and laboratories, have created a constantly increasing demand for laboratorians. More and more, physicians and surgeons are demanding accurate and reliable pathologic, bacteriologic, serologic and chemical examinations and the preparation of biologic products, as diagnostic aids and therapeutic measures.

The number of medical graduates of sufficient special training in laboratory medicine adopting the laboratory as a career and specialty is inadequate to meet this demand. Graduates in medicine are not being attracted to laboratory careers in sufficient numbers, largely because of inadequate financial compensation and limited opportunities for advancement. As a result, it is becoming increasingly difficult to provide instructors in the medical sciences for medical schools, and heads for large hospital and municipal laboratories. It is imperative that salaries shall be revised upward, and that teachers of pathology and bacteriology in medical schools shall renew their efforts to attract students and recent graduates to laboratory careers. This can be done largely by developing and encouraging those who show special aptitude and leaning toward this work.

One result of the increasing demand for laboratorians and the shortage of medical graduates adopting this work has been an increase in the number of lay persons engaging in medical laboratory practice. In some instances, these are doctors of philosophy who have majored in the medical sciences, and doctors of public hygiene or certified sanitarians with special training in laboratory medicine, but not infrequently they are technicians, trained more or less thoroughly in laboratory methods and varying greatly in experience, skill and personal fitness.

In my opinion, it is indeed fortunate that properly prepared lay persons are attracted to laboratory careers. So far as clinicopathologic, bacteriologic, serologic and chemical work are concerned, there is no reason why doctors of philosophy or public hygiene, and experienced laboratory technicians who have given these subjects special study and attention, should not qualify and prove as capable for conducting the examinations as the medical graduate, and, indeed, prove more efficient, in comparison, if the latter has nothing more than the usual undergraduate medical courses of instruction in the way of technical training and experience. In other words, a course in medicine is not essential in preparation for the technical side of this work. But a medical education and experience are required in preparation for independent work in tissue pathology and roentgenology.

However, for the interpretation of laboratory examinations, a medical education is essential. For this reason, the directors or heads of medical laboratories should be graduates of medicine, possessing a fair degree of clinical experience in order that they may serve as consultants in this field for evaluating the results of laboratory examinations and may aid the physician and surgeon in correlating them with clinical data. In other words, a medical education would appear essential in preparation for the highest positions in medical laboratories, and the interpretation of examinations in tissue pathology, serology (with special reference to the Wassermann reaction) and roentgenology should always be in the hands of the specially trained and experienced graduate in medicine.

Unquestionably, properly trained and careful technicians can conduct the various tests and examinations in clinical pathology, bacteriology, chemistry and serology and prepare sections of tissue, as well as medically trained pathologists can. In fact, women are usually endowed by nature with more patience and aptitude for details than the average man and are more likely to be content with routine work. When especially trained in a certain branch instead of being required to have a smattering of all kinds of laboratory methods, they are capable of rendering very satisfactory services and are fast becoming as indispensable for the conduct of medical laboratories as nurses are in the practice of medicine and surgery.

In a large number of institutions, technicians are being practically depended on for the conduct of laboratories, with little or no supervision. In some instances, commercial laboratories are being conducted by them, and the patronage of physicians and sometimes of the laity is being solicited. With the smaller hospitals, there appears no alternative, as the work does not enable the institution to pay an adequate salary for a well-trained pathologist, although much could be done by employing a pathologist to serve part time in two hospital laboratories overseeing and directing the work of the laboratory interns and technicians.

For various reasons, therefore, nonmedical persons in increasing numbers are engaging in medical laboratory practice. So far as making tests and examinations are concerned, nonmedical graduates and technicians

* Chairman's address, read before the Section on Pathology and Physiology at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

possessing adequate training and experience are as acceptable as medical graduates; but, in tissue pathology, a medical education is essential, as it is likewise for the interpretation of laboratory results in general, with special reference to tissue pathology, serology and roentgenology. The question now arises regarding the legal status of nonmedical laboratorians in relation to the laws governing the practice of medicine in the different states; also as to whether or not it is advisable for state boards of medical licensure to devise some means of bringing nonmedical laboratorians under control, especially those conducting laboratories without the supervision of a doctor of medicine, who may be held responsible.

In a broad and general manner, persons making medical laboratory tests and examinations and reporting the results of these to physicians are engaged in the practice of medicine, even though they do not apply remedial measures. When bacteriologic examinations are made and an autogenous vaccine is prepared, with advice for the physician as to dosage, the technician comes even closer to the actual practice of medicine, even though he or she may not actually give the injections. The practice of medicine cannot be construed as being confined to the application of remedies; laboratory examinations are properly included, since the results may be applied in the making of diagnoses and the application of remedial measures. A recent decision by Attorney-General Allen [1] of Massachusetts was to the effect that "a person acting as a pathologist should be registered under the law providing for medical registration." In this particular case, the acting pathologist was a doctor of medicine who did not believe that registration was required for conducting pathologic work. The decision opens up the probability that other laboratorians must secure registration in Massachusetts and other states with similar laws; as stated by Allen: "In order to practice medicine one need not cover the entire field of the science. If he devotes himself to a very restricted part of it, he still may be found to practice medicine. It is a matter of common knowledge that there has been great specialization in the profession in recent years."

According to this opinion, a doctor of medicine who is confining his or her work to the laboratory, under the broad and general designation of "pathologist," is engaged in the practice of medicine and must be registered to avoid the possibility of prosecution. But how about the doctors of philosophy and the non-degree technicians who, in many instances, are conducting medical laboratories without the supervision of a registered doctor of medicine to assume responsibility? Is it not a matter of importance that the state shall inquire into their qualifications for conducting a medical laboratory and insist on a minimum standard of education, skill and experience in this work? What is the medicolegal status of their examinations—for example, the results of a Wassermann test in a divorce suit?

Should the states provide for the examination and registration of nonmedical laboratorians? Or would it suffice for the states to require that they practice only under the supervision of a medical graduate laboratorian who assumes responsibility? Or is it sufficient to let matters stand as at present, in which case physicians and laity shift for themselves in having pathologic, bacteriologic, serologic, chemical and even roentgenologic examinations made by any one whom they select or may be compelled by circumstances to call on, whether or not they are medical graduates and regardless of their qualifications in general?

Opinions on these questions may vary considerably. As long as nonmedical laboratories make examinations and submit reports to physicians only, it may be granted that the latter assumes most of the responsibility and that it makes little difference to the state whom the physician calls on for these examinations and for even the interpretation of the results. Under these conditions, the state may claim to afford ample protection to her citizens by holding physicians responsible, provided nonmedical and unregistered laboratories are forbidden to make medical examinations for the laity.

However, it is inconsistent to require examination and registration of medical graduates specializing in laboratory medicine and allow all other laboratorians doing similar work to practice without fulfilling these requirements, as is the case at the present time. Nothing need nor should be done to prevent nonmedical laboratorians from engaging in this work, because the majority are capable of conducting laboratory examinations in a thoroughly acceptable manner, and their services are invaluable and indispensable; but nonmedical laboratorians should not be permitted to interpret the result of examinations to the laity, because this touches on the diagnosis and possibly on the treatment of disease and so involves the practice of medicine. Under these conditions, a nonmedical laboratorian could examine the urine of a person and even make a Wassermann test for him, but the results should be interpreted by a physician, unless the individual wishes to rely on his own judgment and information.

I believe that the time has arrived when the state should give these questions some attention, in reference not only to medical laboratory examinations but also to the roentgenologic work being done by nonmedical technicians.[2] Many physicians—probably the majority—give little or no attention to the qualifications of those to whom their laboratory work is entrusted. During former days, when most clinical laboratory work embraced simple urine and blood examinations, errors probably did little harm, but the chances of harm resulting from erroneous Wassermann reactions, tissue diagnoses and various bacteriologic and chemical examinations may be considerable, and, indeed, with the Wassermann reaction, may be incalculable, in relation to the domestic life, health and happiness of the patients. As a general rule, practicing physicians do not realize the many chances for error in laboratory work; "to them a test is a test, regardless of by whom or how it is made;" and not a few fail to realize the necessity for skill, experience and care for the proper conduct of most medical laboratory examinations.

While individual rights against state interference and control are to be carefully guarded, some means should be found by the state for the licensure and control of nonmedical laboratorians engaging in general laboratory work without medical supervision; just as the state may require the examination and licensure of the doctor of medicine practicing pathology, in a general sense, as a specialty. The technician employed in a physician's office and the technicians working in an institutional laboratory under a licensed physician would be untouched, as the physician or institution may be trusted with passing on the qualifications of the tech-

1. Boston M. & S. J. 187: 186 (Jan. 19) 1922.

2. Trostler, I. S.; Darling, B. C., and Landau, G. M.: Medical Supervision of Commercial Laboratories, J. A. M. A. 78: 1219 (April 22) 1922.

nician and assumes responsibility for his or her work. But provision should be made for the examination and licensure of the doctors of philosophy and hygiene and other technicians who are not doctors of medicine, who are engaging in independent medical laboratory work and practice either in commercial, municipal or institutional laboratories. So many nongraduates of medicine are entering on medical laboratory practice that some regulation and some acceptable criteria of fitness for this work are required for the protection of both the medical profession and the laity, and especially so, since medical laboratory examinations are being requested and relied on more and more as aids in the diagnosis and treatment of disease.

STANDARDIZATION OF CLINICAL LABORATORIES *

JOSIAH J. MOORE, M.D.
CHICAGO

Although the classification of medical schools has raised the level of medical education of the undergraduates and also improved the present status of graduate and postgraduate schools, the majority of physicians, for various reasons, rely on clinical laboratories for much of their diagnostic laboratory work and for much of the newer knowledge in medicine. The pathologist is rapidly advancing from being a good or poor technician to a consultant who must not only be expert in his own line, but in addition must have considerable knowledge of all the specialties. In order to have this information, the training must be broad in actual experience and practical skill.

The ideal laboratory director should be a broad minded, conservative, conscientious pathologist, preferably with clinical training, who must give freely of his knowledge to that group of physicians who depend on him for laboratory service. His rôle should be that of adviser and consultant, and he should be directly interested in having individual physicians or the profession as a unit acquainted with the value of the more accurate modern procedures of his specialty.

The average practitioner has four methods of keeping up with his education: (1) through clinics and postgraduate courses; (2) through the literature; (3) through teaching in medical colleges, and (4) through laboratory connections. Not all find it possible to take the first. We know by statistics and by the number of unopened journals on the desks of too many physicians that the second is not infrequently neglected. And only a few of those who live in cities where medical colleges are located can learn through teaching. But every practitioner at the present time should, and, I believe, does make some use of the clinical laboratory. The tests are so numerous that every physician at some time or other must come in contact with laboratory men. Here lies the greatest opportunity for the laboratory to give full service to the profession. Here is one of the strongest reasons for keeping laboratories up to a certain standard.

To reach the highest efficiency, laboratories should have in their personnel men and women of the same type as those found in medical colleges and research institutions. Medical colleges and hospitals are appreciating this, and a gradually increasing number of teaching pathologists are acting as directors of the laboratories of affiliated hospitals. This in most instances works out satisfactorily to both the school and the hospital, and is certainly a potent factor in the maintenance of efficient clinical laboratory work.

The time is past when a physician who is unsuccessful as a practitioner can start a laboratory as a last resort. Too many mistakes are made by this plan. I feel sure that most surgeons would prefer that all tissues removed by them should be examined and reported on by trained pathologists, rather than to trust to neophytes who have had a six weeks' course. Numerous mistakes in tissue diagnosis have occurred and will occur through such inexperience. It is now the custom of the majority of large hospitals to have full-time pathologists as directors of their laboratories rather than to have interns acting as pathologists. This has also made it advisable for laboratories unable to secure experienced pathologists to employ larger laboratories or teaching pathologists as consultants.

There is probably no laboratory test in which more mistakes are made than in the Wassermann reaction. Efforts to render this test as reliable as modern procedures will permit by a standardized technic and standardized antigens have been attempted in Europe and this country. I feel that Kolmer [1] has done effective work in his exhaustive study of the numerous technical methods and in his presentation of a standard method. This was not brought forth to stop investigative study of the Wassermann reaction, which still remains unexplained, but to protect the patient and the physician from errors due to faulty technic and wrong interpretations in the hands of the laboratory technician. If it succeeds in this, Kolmer will have accomplished much. A similar attitude is manifested by the New York Department of Health,[2] which says: "The complement fixation test for the diagnosis of syphilis shall be attempted only by those who are especially trained and qualified to do the work. It is undesirable for a laboratory to undertake the performance of the complement fixation test for syphilis unless the number of specimens examined is sufficient to insure adequate control of the reagents and methods used." Both statements are especially appropriate, the first in the fact that large numbers of courses of from two to four weeks are given in the Wassermann technic; and secondly, in the desire of many small hospitals with but few Wassermann tests to have them made in their own laboratory by a young woman who must, in addition, pose as an expert bacteriologist and blood chemist, and do all the routine work in the laboratory, besides taking an occasional roentgenogram. In addition to making the tests, she must also interpret the results—which, combined with little medical knowledge on the part of the technician and no medical supervision, often leads to disastrous complications.

Writing on an allied subject, the Committee on Radiological Frauds and Improper Practices of the Radiological Society of North America [3] states that:

> In May, 1921, the following resolution was passed by the Comitia Minora of the Medical Society of the County of New York:
>
> "As a matter of public policy, it is recommended to the profession that their support of commercial laboratories be

* Read before the Section on Pathology and Physiology at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

1. Kolmer, J. A.: Am. J. Syph. **6**: 82 (Jan.) 1922.
2. Laboratory Manual, New York State Department of Health, 1920, p. 20.
3. Trostler, I. S.; Darling, B. C., and Landau, G. M.: Medical Supervision of Commercial Laboratories, J. A. M. A. **78**: 1219 (April 22) 1922.

withdrawn, and wherever possible, patients be referred to laboratories under the supervision of competent and qualified medical men."

A lay technician who opens his own office and works entirely independent of medical supervision is violating the medical practice act when he gives out written and verbal diagnosis of pathologic conditions, in that he is practicing medicine without a license.

In order that there might be a definite plan to work on, a set of requirements for laboratories was prepared and submitted to a large number of laboratory directors and pathologists, and from the comments and suggestions which they made the following may be submitted:

GENERAL STANDARD REQUIREMENTS FOR CLINICAL LABORATORIES

1. The director of a clinical laboratory should be a medical graduate.

2. All interpretations of laboratory data should be made by doctors (of medicine, philosophy or public health) who are specialists in the branch of work to which the data pertain, i. e.:

(*a*) Serologic, bacteriologic and chemical interpretations should be made by doctors who are trained serologists, bacteriologists and chemists.

(*b*) Tissue diagnosis should be made by doctors of medicine who are experienced pathologists.

3. Technical procedures (methods) used in an acceptable laboratory should be the best available: those used and approved by authorities.

4. The equipment of an acceptable laboratory should be such that the proper technical procedures may be carried out. There should be ready access to current scientific books and journals.

COMMENT

With reference to these suggested requirements, the following statement is made:

1. The director of a laboratory should be able to act as consultant in evaluating for his clients the various laboratory reports and in correlating them and other clinical data.

2. Many technical methods—most of them, perhaps—may be satisfactorily carried out by technicians. The data derived by such methods, however, should be interpreted by specialists.

3. If it is insisted that only the best modern methods be used in a laboratory, it follows that the technicians employed must be trained in these methods.

4. Clinical data and other pertinent information should accompany the submission of specimens or other material to the laboratory.

The scarcity of medical graduates with proper training in laboratory work has led to the suggestion that the director of the laboratory may be a doctor of philosophy who has specialized in bacteriology, medical parasitology, serology or allied subjects, or a doctor of public health. These may, when necessity arises, have access to medical consultation. In discussing this subject, the Laboratory Manual of the New York State Department of Health [2] states that "directors of laboratories, approved for these examinations (i. e., for the diagnosis of diphtheria, tuberculosis, typhoid fever and other communicable diseases) should preferably be graduates of medicine, or bacteriologists of sufficient education and experience to interpret the significance of the results of laboratory examinations. Members of the staff who make diagnoses shall have trained under qualified experts and shall have not less than one year's experience in a bacteriologic laboratory."

Dr. Wadsworth, director of the New York State Department of Health Laboratories, says in a personal communication that:

It has been so difficult to secure graduates in medicine who are also qualified in laboratory work that competent bacteriologists and serologists without a medical education have been accepted. They have often proved more efficient. In all our work we try to avoid making diagnoses, reporting simply the results of the examinations, leaving diagnosis entirely in the hands of the physician at the bedside.

Since it is suggested that the director should be able to act as a consultant, it necessarily follows that the medical graduate is best qualified. Secondly, there is entire accord that tissue diagnosis should be made by doctors of medicine who are experienced pathologists. It does not necessarily follow that the pathologist should be director of the laboratory; but such a combination gives, in my opinion, the most happy results. The question has arisen whether it is not the function of the physician in charge of the patient to evaluate the laboratory report and interpret it with the clinical data. This opinion is perfectly sound, but one difficulty comes from the fact that many practicing physicians cannot evaluate the newer laboratory examination; and if the laboratory reports are made by technicians, no matter how skilled, the laboratory and the patient will fail to get the best results. Various methods for standardizing clinical laboratories may be proposed. An illustration of public health laboratory standardization is to be found in New York. In a brief description of the method employed here, Wadsworth [4] says that the first step was made when the sanitary code established by the public health council of the state, under legislative authority, prescribed that certain diagnostic examinations must be made in a laboratory approved by the commissioner of health. Such examinations, when made in other laboratories, thus have no standing in court. Later the laws were amplified to require that laboratories engaged in public health work secure the approval of the commissioner of health. Approved laboratories must adopt prescribed methods of examination, and a uniform system of reporting and of keeping records. They are occasionally inspected by authorized representatives of the commissioner of health, who advise persons in charge as to methods employed, and are frequently sent test specimens from the central laboratory for checking up on their work. The laboratories are approved for one year. A manual [2] is issued which gives in detail standard methods of procedure for performing the various examinations. Dr. Wadsworth states that such a standard requirement as that submitted is an important step toward standardization, but it is difficult to understand how results are to be obtained unless there is definite responsibility fixed upon some official agency for the supervision and practical testing of the work of the laboratories. It has been necessary in New York State not only to formulate standards, but also to determine the fact that these standards are actually maintained by inspection tests at stated intervals.

Such a method of state control of public health laboratories could be adopted in each state, but there would surely arise the same difficulties we now have

4. Wadsworth, A. B.: Cooperation Between a Central State Laboratory and Local Municipal and County Laboratories, J. A. M. A. 77: 512 (Aug. 13) 1921.

with the multiplication of state boards of medical examiners. Many laboratories could also exist by this plan without approval and control. The state board of medical examiners of Pennsylvania, which has under its jurisdiction the approval and standardization of hospitals for interns, requires minimum standards of laboratory equipment and a competent personnel for the hospital laboratory, which is a progressive step in the proper direction.

A more general system of supervision appears desirable, and this may be accomplished by having the Hygienic Laboratory of the United States Health Service act as the central authorized body. This would be somewhat similar to the issuing of licenses to biologic laboratories for the sale of their products in interstate commerce. Here again we would have difficulties, since the majority of laboratories do work only for a community or local area within the state, and there might arise questions of state and national rights.

In the rapid advance of medical education in this country, the rapid rise in the standard of the medical colleges was accomplished by the colleges themselves in the Association of American Medical Colleges, and the Council on Medical Education and Hospitals of the American Medical Association. It may be possible for the clinical laboratories to form an association and achieve the same success. However, one attempt of this kind has already been made, and the results were not encouraging. The large number of laboratories, in connection with hospitals and private institutions, makes such an undertaking difficult unless strongly supported by some stronger and older organization, such as the American Medical Association.

Another organization, the American College of Surgeons, has undertaken standardization of hospitals, and the Council on Medical Education and Hospitals of the American Medical Association has listed the requirements for institutions offering services to interns. Since the minimum standard requirements for hospitals as stipulated contain clauses applicable to clinical and roentgen-ray laboratories, it may be possible that such clauses may be enlarged to cover the details of the minimum requirements herein set forth.

The support of the American Medical Association, the American College of Surgeons, the Hygienic Laboratory of the United States Public Health Service and the proposed Association of Clinical Laboratories for the enforcement of such a standard of requirements for clinical laboratories as suggested in this paper, or a satisfactory modification of such a standard, is necessary in order to insure the complete attainment of this plan. Such a plan in successful operation would be comparable to a raising of the standard of medical education, as a progressive step in the advancement of medical science.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. KOLMER AND MOORE

DR. FRED I. LACKENBACH, San Francisco: A very valuable means of control is that exercised by the postoffice department. A regulation provides that all specimens sent through the mail shall go into a laboratory, provided the laboratory has a medical director in charge. That matter came up in San Francisco a few years ago. The container of a specimen sent through the mails was broken, and the specimen was scattered. It led to an investigation. The postoffice department sent a man to the various laboratories to find out what conditions were, and provided for issuing permits to these laboratories where the conditions were found acceptable; one of the conditions was that there should be a medical man in charge of the laboratory. One of the great difficulties in laboratories, so-called commercial laboratories, is the competition of inferior laboratories. Men who want to do good work and are capable of doing good work find themselves confronted with many laboratories that are not doing good work, and it lowers the standard; it lowers the compensation that it is possible to derive from the conduct of a laboratory. Further, there is another element, the competition of a physician or group of physicians employing a technician (perhaps some girl who has had a year or so training), putting her in charge of the laboratory work and letting her do the Wassermann tests and other important work. That class of work certainly does not compare favorably with the so-called commercial laboratories taking them as a whole, because commercial laboratories have a reputation at stake, and if they did poor work they could not continue. But in a laboratory where physicians are in charge and work is done slipshod with no one to pass on it it simply goes! That is one of the complications, it seems to me.

DR. PHILIP HILLKOWITZ, Denver: I take issue with some of the suggestions made, although I am heartily in accord with the end in view. In the first place, I take exception to the premise on which I believe both papers are based, namely, to standardize an impersonal institution as understood in the words "clinical laboratory." I desire to emphasize the fact that the great majority of men who are engaged in clinical pathologic work do not consider themselves laboratory men, but practitioners of medicine engaged in a particular specialty. We think it entirely inadvisable, therefore, to standardize the laboratory or to license the technician any more than the laryngologist or the surgeon would want the state to tell him what kind of surgical instruments he should have, or how well the nurses he had working for him should be trained. We think that every man who engages in clinical laboratory work should be responsible for the technic and interpretation of all tests that come to his laboratory. It is his concern to see that the technicians he trains, or gets from the outside, do their work properly. We do not like the term "laboratory" as something apart from the physician who directs it. As regards the motive for licensing technicians on account of the scarcity of trained pathologists: the reward to the medical man who devotes his life to this field is not commensurate with the time, labor and study involved. That is our fault. Physicians expect hospitals to furnish blood counts, Wassermann tests, etc., on the same basis as light and heat. Every one of these tests should be conducted under the supervision and the proper interpretation of a medical man who is entitled to proper compensation for his function as a consultant. I am sure that education of the public will bring about this result. It should bring it about in every community so that pathologists will receive adequate compensation, as do the surgeons, laryngologists or other specialties. With proper valuation of the work of the pathologists, many a young graduate, instead of turning to the more lucrative fields of internal medicine or surgery, will look to pathology for his life work. If we license technicians, it means that the state places its seal of approval on this particular person. The very same question came up with the state boards of health licensing chiropractors and other cults. Where this license was granted, the "irregulars" now perform surgical operations. We shall have the very same thing with technicians. Therefore, let every clinical pathologist be responsible for the competence of the help in his laboratory.

DR. C. C. BASS, New Orleans: I doubt whether we have reached the time when a nonmedical person should be licensed to perform any medical function, such as laboratory examinations, without the supervision and direction of competent medical men. It is true that if the physician wishes to delegate any part of his duty or of his work to a person who is specially trained to do that particular work, I think that is quite permissible, whether it is laboratory or other work. If he wishes to have a competent person to make laboratory examinations for himself, perfectly well and good. If a hospital wishes to employ a laboratory technician to perform certain of the technical work under the direction of

a competent pathologist, it seems to me quite proper; but there should be no such thing as a hospital laboratory, or any other clinical laboratory, making laboratory examinations and reporting thereon except under the direction of competent medically trained men. Such work being done by nonmedical persons without supervision tends to belittle the recognition of the importance of the work of the clinical laboratory. Not only does such work tend to belittle and cheapen the work of the clinical laboratory, but it also tends to prevent the correction of the cause of the present insufficient number of competent laboratory men, namely, insufficient compensation. If a physician's ability to do reliable laboratory work were as well recognized and as well paid for as the other parts of the practice of medicine, there would not be such a shortage of competent physician laboratory workers as exists today. It seems to me, therefore, that it is unwise to license anybody except medically trained men, or women, to practice this specialty any more than any other specialty in medicine.

DR. FRANK M. HUNTOON, Glenolden, Pa.: It seems to me that the whole question develops itself on two points: First, to obtain a competent pathologist who is a competent serologist. Where are you going to get a competent pathologist, and who is going to say he is competent? A pathologist can acquire bacteriology and serology. A man of good judgment and common sense can acquire this if he sufficiently applies himself. Technical pathology, however, is a special subject. The pathologist must have a peculiar type of picture memory which enables him to muster up his past experiences at the time he is looking at his slides. The question of deciding whether a tissue growth is malignant, or nonmalignant is a matter of life and death. Now whom are you going to trust with that diagnosis? Certainly not every technician or a nonmedical man? It seems to me that Dr. Kolmer's idea is that the laborer is worthy of his hire, that a man who makes the diagnosis that takes the application of years of knowledge is as worthy of a consultation fee as the internist who sees the outside of the patient and guesses at what goes on in the inside. In regard to the education of the physician who receives the report: Dr. Moore mentioned in his address that you were really forced to make the diagnosis for the physician. If the laboratory man interprets the results of his examination, he is then acting as a consultant and should receive a consultant's fee.

DR. WARD BURDICK, Denver: I am heartily in accord with the remarks of Dr. Huntoon. I do not think we should let the bars down too freely. There are at present too many lay people crowding at the gate to medicine, as evidenced by chiropractors and osteopaths. I do not approve of it. I merely wish to go on record as speaking against licensing lay people and permitting them to conduct laboratories without medical supervision. I think it is entirely wrong, and I believe that that will do more toward keeping first class men out of this field than anything else that could happen. I believe that this is at present one of the reasons why more good men, well qualified men, are not taking up the specialty of clinical pathology.

DR. HERMAN SPITZ, Nashville, Tenn.: I heartily agree with the statements that have been made. This question has been discussed pro and con for the last nine or ten years. It is a constant topic of discussion, and when a number of laboratory men get together, a constant source of irritation. I feel that a large part of the irritation is our own fault. Our professional colleagues come into our office and ask us to train a technician for them in from four to eight weeks; usually some girl who is looking for a job or a relative of the doctor's. They thereby imply that everything we have acquired in eight or ten years of hard work can be acquired by a girl, with or without a high school education, in from four to eight weeks. It is our own fault if we fall into the trap. We should say: "If you want her to do laboratory work, send her to college for from two to four years to learn to do things properly, and after that time you will get some satisfactory results from her work." If the physicians in my community desire to employ a layman to do their work, whether a woman or a male technician, that is their own business, not mine; but when a physician comes to me and wants laboratory work done and I or my technician, whom I have trained for years and in whose ability I have confidence, runs through a piece of work, I render an opinion in the same spirit that a consultant, whether an internist, an aurist or a surgeon, renders an opinion, and I expect a fee. If they are not willing to pay that, they do not get the service. If the case is a charity one, they get the work irrespective of what the circumstances may be. I feel that if we prolong the discussion of licensing laboratories conducted by laymen, we are simply throwing the bars down and admitting to our colleagues that all this work we have been talking about for so many years as being so highly important and necessary to do is not that at all, but can be done by anybody who has taken a four to six weeks' course in anybody's laboratory. I am certainly opposed to any such system.

DR. A. J. CARLSON, Chicago: We examine a specimen of blood for syphilis. The internist asks for our findings. It is either syphilitic or nonsyphilitic. Is that diagnosis? We examine urine specimens for albumin or sugar, and we find them. Is that diagnosis? When it comes to the interpretation of a tumor, the very best men will frequently differ as to whether it is malignant or not. It seems to me that unless we clearly differentiate here what we mean by rendering diagnosis and reporting on facts, we are merely quibbling in saying that the laboratory director at his office desk with the report of the laboratory man before him is a consultant. Unless the director did the laboratory work he does not know whether there was sugar or albumin in the urine, or whether the blood specimen contained spirochetes. So the onus, as I see it, is still the accuracy of the work. The interpretation cannot be made except in connection with the patient, as to how he contracted the malady and what chance he has to survive. Merely passing on the written laboratory report should not be dignified by the term diagnosis or consultation. The important thing there is the accuracy of the laboratory work. Is that specimen of blood syphilitic? This we cannot determine by sitting at our office desks.

DR. J. H. BLACK, Dallas, Texas: In regard to Dr. Carlson's statement, I think there is an important clinical difference between the work of the technician and the pathologist. Take one of the examples he gave for instance, the finding of albumin in urine. Any technician may be able to report whether albumin is present or not, but the technician is not able to discuss intelligently with the physician whether it is a transient condition due to excessive exercise, an orthostatic albuminuria due to a lordosis, or an evidence of a true nephritis. The technician may report sugar in the urine, but cannot discuss intelligently with the physician whether it is an alimentary glycosuria, a renal glycosuria or a true diabetes mellitus. That offers a legitimate field which the technician cannot in any sense fill. We must be able to interpret for the physician our findings if he is not in a position to do it himself. The solution is going to come when the clinical pathologist makes the general practitioner see that he can give service that the technician cannot. We are clamoring constantly that we are consultants and not technicians. If we are qualified to render him service, and do render him service which the technician cannot, then we shall have little difficulty with the practitioner in convincing him that we are something that he really needs.

DR. JOSIAH J. MOORE, Chicago: The statement of Dr. Hillkowitz that laboratory work in a hospital should not be considered in the nature of overhead expense as water, heat, light, etc., and billed as a flat fee is agreeable to pathologists. It is the tendency of hospitals to do this; but until the surgeon and the clinician are placed on the same basis I hardly think it is fair to the pathologist. Since at present it is difficult to obtain competent pathologists for the medical schools, it will be impossible to have them for fifty-bed hospitals. However, the director of a laboratory does not necessarily have to be in the hospital. With a properly trained technician as resident, who can perform the routine work, the more difficult tests can be sent to the director, who may be some miles away. Dr. Carlson raised a question on the meaning of interpretation and diagnosis. Frequently we are asked to interpret a blood count, following which a conver-

sation with the physician on the condition of the patient leads to a suggested diagnosis. We are then acting as consultants and not merely as technicians. Similarly, when making a diagnosis of a specimen of tissue after receiving a complete history or conversing with the surgeon, we are performing our work as consultants. Interpretations are commonly called for in the field of blood chemistry. As far as can be determined, this is now taught only as optional courses in the fourth year of medicine, and the majority of students at present graduate with but little practical knowledge of the subject. Naturally, the graduate of former years is still more handicapped, and here we find a large field for the laboratory man to help both the physician and through him the patient. Whether the laboratory man is a pathologist in a school, in a hospital or in a public clinical laboratory, he should always be a teacher, and that is the kind of men we want in our laboratories.

A STUDY OF FOUR HUNDRED AND EIGHTY-FIVE CASES WITH GENITAL LESIONS*

JAMES RUSSELL DRIVER, M.D.
CLEVELAND

The conditions diagnosed in a study of 485 cases showing lesions of the genitalia clinically suspicious of venereal disease are presented in Table 1.

TABLE 1.—CONDITIONS DIAGNOSED IN CASES SHOWING LESIONS OF THE GENITALIA

	Condition	No. of Cases	Percentage
1.	Chancroid	177	36.5
2.	Chancre (202 lesions)	153	31.5
3.	Chancroid and chancre (mixed)	18	3.7
4.	Chancre redux	4	0.83
5.	Secondary syphilis (moist papules)	32	6.6
6.	Herpes progenitalis	37	7.8
7.	Erosive gangrenous balanitis and vulvitis	30	6.2
8.	Nonspecific (simple) balanitis	11	2.2
9.	Folliculitis	7	1.4
10.	Ulcerating granuloma of the pudenda	8	1.65
11.	Scabies	3	0.62
12.	Tuberculous ulcer	3	0.62
13.	Epithelioma	1	0.21
14.	Kraurosis vulvae	1	0.21

This series constitutes all the material of this type seen in the skin and syphilis clinic of the outpatient department of Lakeside Hospital and in private practice by me and my associate, Dr. Harold N. Cole, from Aug. 1, 1920, to Feb. 1, 1922, a period of eighteen months. The methods employed in coming to a final diagnosis will be briefly outlined.

HISTORY

The history of the case is often helpful, if accurate data can be obtained. In chancroid, the incubation period is short, as a rule less than ten days; while in syphilis the incubation period is usually from ten days to six weeks. We have found the history to be the least reliable of all clinical aids, and it should not be the sole factor in making the diagnosis.

CLINICAL APPEARANCE

The number of cases in which we see the so-called typical chancre is comparatively small. The frequency of multiple chancres, 38 per cent. in the series, the not uncommon occurrence of mixed lesions of chancre and chancroid, 3.7 per cent. in this series, and the presence of single lesions in cases of chancroid, 53 per cent. in our study, again make the importance of laboratory aids in diagnosis quite evident. We feel that the number of cases in which a clinical diagnosis of chancre or chancroid can be made safely is almost nil, and this method of making a diagnosis is to be discouraged. In only twenty-five cases was a diagnosis of syphilis made clinically. In these, it was impossible to follow the case to final diagnosis. None of this group received treatment by us. An efficient social service follow-up system in the Lakeside clinic made it possible to follow such a large percentage of our cases to final diagnosis.

LABORATORY METHODS

The laboratory methods used in this study consisted of (*a*) the dark-field illuminator for detection of *Spirochaeta pallida*, the fusiform bacillus and spirillum of Vincent; (*b*) the Wassermann test, used as a follow-up method for all cases having negative dark-field examinations and on those cases with genital lesions suspicious of secondary syphilis; and (*c*) biopsy examinations in cases diagnosed as epithelioma, tuberculous ulcer and ulcerating granuloma of the pudenda.

Dark-Field Illuminator.—Of first importance in the diagnosis of primary syphilis is the dark-field illuminator. This instrument is the most simple and accurate for the demonstration of *Spirochaeta pallida*, the procedure being no more difficult than the simple staining methods for the microscopic examination for the gonococcus or the tubercle bacillus. It should be in the equipment of every physician who treats venereal disease. It is lamentable that practically the only aid to the diagnosis of syphilis before the Wassermann reaction becomes positive should not be more universally used. In this series, all cases received at least one dark-field examination. In those cases not diagnosed at the first examination and which we were able to follow to ultimate diagnosis, examination by this method was made at one and two day intervals until at least four negative results were obtained.

Wassermann Reaction.—In all cases in which the diagnosis was not made by means of the dark field, the Wassermann tests on the blood of the patient were started at the end of the second week, and weekly examinations made for the first eight weeks and every two weeks thereafter. The patient was not pronounced nonsyphilitic until a negative result at the end of three months was obtained.

Biopsy.—In the few cases clinically suspicious of epithelioma and of tuberculosis, the diagnosis was confirmed by biopsy, by negative Wassermann tests and by negative dark-field examination. In all cases of ulcerating granuloma of the pudenda, biopsy examinations and microscopic smears were made.

ANALYSIS OF CASES

Syphilis.—The diagnosis of syphilis was made in 203 cases, or 42 per cent.; 178 of them being diagnosed by means of either the dark field or the Wassermann test, or both. In addition, we had twenty-five cases which were diagnosed by history and clinical evidence alone, because of the inability to follow the case through to ultimate laboratory diagnosis. In 171 cases, the diagnosis of primary lesion was made. Of this number, 98, or 57.3 per cent., had positive dark fields. Table 2 presents the results of the dark-field examinations.

The patients in the largest group were examined between one and ten days, thirty-seven giving positive

* From the Department of Dermatology and Syphilology of the Western Reserve University Medical Department and of the Lakeside Hospital.

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reactions and twenty-eight, negative. The fact that out of the twenty-eight negative results twenty-four cases had received previous local treatment probably accounts for the rather low percentage of positive results. It will be noted that a higher percentage of positive examinations was found in the twenty to thirty days' series than in the ten to twenty days' series. This is doubtless accounted for by the relatively small number of cases, there being but twenty-five in this group. From an analysis of these results, we are convinced that the greatest factor in preventing a diagnosis by dark field was local treatment of the lesions, especially with preparations of mercury. The age of the lesion did not make any appreciable difference so long as it had not been treated. In those cases in which the lesion was concealed by phimosis, examination by dark field was also very unsatisfactory. In Table 3, the location of the primary lesions in our series is shown.

TABLE 2.—RESULT OF DARK-FIELD EXAMINATIONS IN ONE HUNDRED AND SEVENTY-ONE CASES OF PRIMARY SYPHILIS

Duration of Chancre	Number of Cases	Dark-Field Examination		Treated Locally	Dark-Field Percentage Positive
		Positive	Negative		
1 to 10 days	67	39	28	24	58.2
10 to 20 days	48	30	18	27	62.5
20 to 30 days	25	16	9	18	64
30 to 60 days	31	13	18	22	42
Total	171	98	73	91	57.3

It will be noted that the most common location was on the prepuce, 34 per cent., the coronal sulcus having 17.2 per cent. and the frenum 14.3 per cent. The majority of the lesions were of the papulo-erosive type. The so-called typical hunterian chancre was comparatively uncommon. Lesions of the veneer type with little or no induration were seen most frequently on the shaft and prepuce. In Table 4 is shown the effect of previous local treatment on the result of dark-field examinations in cases of primary syphilis.

Of a total of eighty-one chancres which had previously been treated locally, including treatment with mild antiseptics, 26 or 28.5 per cent. were positive and 65 or 71.5 per cent. were negative. It will be seen from a study of this table that the mercury preparations nearly always inhibit the possibility of demonstrating *Spirochaeta pallida*, there being 94.4 per cent. negative results. In only one instance out of seventeen was the dark field positive after the use of mercury preparations locally. Copper sulphate used in four cases and compound solution of cresol in two inhibited the dark field in each instance, indicating that as spirocheticides they are very effectual. The actual cautery failed to prevent the demonstration of the organism in only two cases out of seven. Hydrogen peroxid is also of practically no hindrance in the demonstration, eight tests out of ten being positive. In thirty-six cases, the drug used was unknown, it being a white powder or salve procured from the drug store. In the majority of cases, it was probably calomel. There were thirty-one failures to demonstrate the organism in this group.

TABLE 3.—LOCATION OF LESIONS IN ONE HUNDRED AND SEVENTY-ONE CASES OF PRIMARY SYPHILIS

Condition	No. of Lesions	Percentage
1. Prepuce	81	34
2. Sulcus	41	17.2
3. Frenum	34	14.3
4. Shaft	27	11.4
5. Glans	23	9.66
6. Concealed (phimosis)	21	8.8
7. Intra-urethral	3	1.3
8. Labia majora	4	1.7
9. Labia minora	2	0.81
10. Vagina	1	0.42
11. Cervix	1	0.42
Total	238	

In eighty cases of chancre, there was no history of previous local therapy. The dark field was positive in seventy-three instances, or 81 per cent. It is seen, therefore, that in the locally treated group only 28.5 per cent. were diagnosed by dark field, while in the untreated series 81 per cent. were positive by this method.

The comparative infrequency of the diagnosis of primary syphilis in the female is striking in our series. Out of 171 primary infections, there were only eight cases of chancre in women, of which six were diagnosed by the dark field. This, perhaps, is explained by the occurrence of the primary lesion in the vagina or on the cervix in many cases, where it is not discovered by the patient or physician. The majority of cases of secondary eruption in women are without a history of a sore having been noticed.

In our series of primary syphilis, there are four cases of reinfection. In all cases, the previous diagnosis had been made by the dark field, and the Wassermann reactions were negative. In each instance, the second chancre was in a new location. The dark-field examination was positive and Wassermann reaction negative in each instance.

TABLE 4.—EFFECT OF LOCAL TREATMENT ON THE DARK-FIELD EXAMINATION OF EIGHTY-ONE CHANCRES

Drug Used	Number of Cases	Dark-Field		Dark-Field Negative Percentage
		Positive	Negative	
Mercury preparations	17	1	16	94.4
Tincture of iodin	5	4	1	20
Copper sulphate	4	0	4	100
Hydrogen peroxid	10	8	2	20
Actual cautery	7	5	2	30
Doubtful	36	5	31	86
Compound solution of cresol	2	0	2	100
Total	81	23	58	

A diagnosis of secondary syphilis was made in thirty-two cases. In each instance, lesions of the moist, papular type, suspicious of syphilis, were present, without evident secondary skin eruptions. The dark-field examination was positive in all.

Chancroids.—Because of the difficulty in demonstrating the Ducrey bacillus by either cultures or smears, and because of the difficulty of controlling ambulatory cases after autoinoculation, the diagnosis of this condition was made clinically in each instance. There are 195 cases in this series, 179 in males and sixteen in females. In eighteen cases, or 0.87 per cent., the disease was associated with chancre. This leaves 177 cases with a diagnosis of chancroid alone. Of this number eighty-three, or 46.9 per cent., were multiple. One hundred and ten cases, or 62.1 per cent., showed definite, painful inguinal adenitis. Of these, fifty-four cases went on to suppuration, while fifty-six were nonsuppurating. The plan of hospitalizing the patients in as many instances as possible, with rest in bed and ice packs locally, we feel, is responsible for the low percentage of nonsuppurating cases. The fact that nearly one half of the series showed on examination single lesions is noteworthy.

Herpes Progenitalis.—There were thirty-seven cases of genital herpes, or 7.8 per cent. of the total series. There were twenty-eight cases in males and nine in females. In eleven cases, there was a history of previous venereal disease. Seven patients had had gonorrhea; three had syphilis and one chancroid. In twenty-two cases, there was a history of one or more previous attacks. Our series with 75 per cent. in males and 25 per cent. in females agrees with most authorities that the condition is more common in males. When abraded or secondary infection is present, the process may be confused with chancroid, or possibly an early chancre. The absence of positive dark-field findings and follow-up Wassermann tests, associated with a sensation of burning and itching, with a history usually of previous attacks and the lack of induration and inguinal adenitis, makes the diagnosis usually not difficult.

Erosive Gangrenous Balanitis and Vulvitis.—There were thirty cases, or 6.2 per cent. of the total series. It is my opinion that this condition is, perhaps, much more common than is generally supposed. In each instance, diagnosis was made by demonstrating the fusiform bacillus and spirillum of Vincent in dark-field preparations. Most cases of so-called phagadenic chancroid, we believe to be due to this organism. In our study of 485 cases, there were no cases of phagadena. In all cases suggesting this, diagnosis of erosive gangrenous balanitis was made by the dark field. Early recognition of this disease should be emphasized; for once the process has gone beyond the stage of superficial erosion, it is difficult to prevent extensive destruction. In the first few days of the disease, the patient usually complains of a burning irritation of the glans and foreskin. The case at this stage presents a rather abundant, greenish, purulent discharge, which, when removed, reveals a very superficial erosion of the epidermis on a red, inflamed surface. Examination of the discharge with the dark-field illuminator reveals many of the organisms described above. To the practiced eye, there is no difficulty in differentiating the large, irregular, unequal, waved, rapidly moving spirillum from the shorter, delicate, slowly moving *Spirochaeta pallida* with its spirals of equal wave length. We have at times found the two organisms in the same patient and on the same lesions. A diagnosis of both erosive gangrenous balanitis and chancre from a single dark-field preparation should be most carefully made because of the polymorphous character of the spirillum of Vincent. In this series, five cases were in females and twenty-five in males. In only fourteen of the thirty cases had there been an exposure within three weeks. The disease is not always of venereal origin. In a few cases, the possibility of oral etiology was well established. The majority were in patients with long foreskins, and uncleanliness doubtless was a contributory factor in many instances.

Nonspecific Balanitis.—Eleven cases, or 2.2 per cent. of the series, were diagnosed as simple balanitis. Differential diagnosis from erosive gangrenous balanitis was most necessary. Dark-field examination with follow-up Wassermann tests in some cases is sufficient to clear up the diagnosis. The use of strong antiseptic preparations for prophylaxis is the most common cause of this condition. Irritating secretions in cases of acute gonorrhea and, in some instances, uncleanliness, are responsible.

Folliculitis.—Seven cases, or 1.4 per cent., were diagnosed as folliculitis. Lesions are usually on the shaft near the base of the penis and occasionally develop into furuncles.

Ulcerating Granuloma of the Pudenda.—There were eight cases representing 1.65 per cent. of the series. In all the cases, biopsy examinations and microscopic smears were made in addition to dark-field and Wassermann tests. All the cases but one were in women. Examination for the Leishman-Donovan organism was in only three cases satisfactory, and we arrived at the diagnosis largely by clinical means. Biopsy examinations reveal pathologic conditions similar to those of other granulomatous processes. There is marked chronic inflammation with elongation of the papillae and interpapillary processes, usually. There is round-cell infiltration in the upper corium. The absence of giant cells and caseation helps to rule out tuberculosis, and malignancy is ruled out by the pathology also. The blocking of the draining lymph channels may produce a pseudo-elephantiasis of the vulva, as seen in three of our cases. The Wassermann test may be positive (six cases in this series); but in our experience the disease is not influenced in the least by antisyphilitic therapy. The disease is most common in the negro (seven out of eight cases in this series). All of our cases were cured with antimony and potassium tartrate (tartar emetic), reacting to this remedy only. The intravenous method was used. One cubic centimeter of a 1 per cent. solution was given as the initial dose. This was increased 1 c.c. each dose until the patient received 12 c.c. as a dose. Injections were given twice each week until an average of about twelve or fifteen treatments were given. Some of our patients received as high as thirty-five injections without bad effects. There have been no recurrences to our knowledge. The diagnosis of ulcerating granuloma of the pudenda we feel should be considered in all cases, especially in colored females from Southern states, with chronic, ulcerating lesions of the genitalia.

Scabies.—There were only five cases of scabies examined by the dark field. In these cases, the presence of lesions only on the genitals made them clinically suspicious of chancre. The ultimate appearance of typical lesions on the classic areas of the body, with negative laboratory findings of syphilis, cleared up the diagnosis.

Tuberculosis.—In three cases, a history of ulcer of several months' duration, with negative laboratory findings and a pathologic picture most suggestive of tuberculosis, determined the diagnosis.

Epithelioma.—We had one case of several months' duration in an elderly man. Laboratory findings of venereal disease were negative. Biopsy examination revealed squamous-cell carcinoma.

Kraurosis Vulvae.—One case was seen. The condition is uncommon. The presence of superficial erosion suggested the possibility of erosive gangrenous vulvitis. The long duration, associated with pruritus and itching, with atrophy and almost complete disappearance of the labia, and with a chronic, irritating discharge from the cervix, in addition to negative laboratory and physical findings for venereal disease, made the diagnosis of kraurosis vulvae most plausible.

SUMMARY

1. In a study of 485 genital lesions coming up for diagnosis, we found syphilis in 203 cases, or 42 per cent. This frequency is rather startling and is a reminder of how careful we must be of ruling out this disease in all genital lesions. We are convinced that

too often the patient with a genital lesion is discharged as being free from syphilis after one or more cursory examinations—the undiagnosed syphilis revealing itself later.

2. Chancroids were seen 177 times, or in 36.5 per cent., and in eighteen cases there was a mixture of chancroids and syphilis.

3. The occurrence of four cases of reinfection with syphilis in our series, all with patients whose dark-field examination was positive and Wassermann reaction negative at the time of the first infection, emphasizes the importance of the early diagnosis of the disease, such cases apparently reacting better to treatment. It also emphasizes the value of our modern methods of treatment when properly and consistently carried out.

4. Ulcerating granuloma of the pudenda was encountered eight times in our series of cases, all but one of the cases being seen in negroes. This rare disease of the tropics is apparently becoming more common in our part of the world, or we are diagnosing a disease which in the past has been overlooked. In our experience, tartar emetic was a specific, and the sole specific, for the trouble.

5. Erosive gangrenous balanitis and vulvitis was seen in thirty patients, mostly males, and is best diagnosed by the dark-field illuminator. It is important that the disease be recognized at its inception, and that specific treatment be begun before the destructive results of the disease have set in.

6. The clinical diagnosis of primary syphilis is open to many serious objections and should not supplant the use of laboratory methods. The dark-field examination is preferable to the Wassermann test in the early recognition of primary lesions. All cases not diagnosed by dark field should be followed by Wassermann examinations on the blood at regular intervals for at least three months.

7. It is important that physicians realize that the chances of making an early diagnosis of syphilis are greatly diminished, about three to one in our series, if local antiseptics are used on genital lesions before dark-field examinations are made. In seventeen cases in which we were positive that some form of mercury had been used on the lesions, we were able to make an early dark-field diagnosis in only one case.

8. It may be interesting to note that among 171 primary lesions, only eight chancres were observed in females—six of them being diagnosed by the dark-field illuminator. This may be due to the fact that the female notes no evidence of the disease in a large majority of the cases before secondary symptoms intervene; or due to the examining physician's failing to find the primary seat of invasion in the vagina or on the cervix.

2073 East Ninth Street.

Hookworm in Colombia.—In the report published recently by Dr. F. A. Miller of the Rockefeller Foundation on the hookworm campaign in Colombia, it is shown that during the year 1921, 131,139 treatments were given, 47,882 patients were treated and 53,990 persons examined. A total of $11,863.33 was spent, which means an average of 22 cents for each person examined and 25 cents for each patient treated. A temporary laboratory was in operation during the campaign. The Colombian government appropriated $100,000 for the campaign. Out of this, $12,868 was spent for equipment and transportation, including propaganda, and $73,661 for salaries. The government also granted free postage on all literature and correspondence relative to the campaign.

THE KAHN PRECIPITATION TEST IN THE DIAGNOSIS OF SYPHILIS

A PRELIMINARY STUDY *

HARTHER L. KEIM, M.D.
AND
UDO J. WILE, M.D.
Instructor and Professor, Respectively, of Dermatology and Syphilology, University of Michigan Medical School
ANN ARBOR, MICH.

Recently Kahn [1] has proposed for the serologic diagnosis of syphilis a precipitation reaction in which he utilizes, as antigens, alcoholic extracts of heart muscle, with and without the addition of cholesterin. The clinical application of this reaction, in 350 unselected cases entering the service of dermatology and syphilology of the University Hospital, Ann Arbor, forms the basis of this study.

Since the introduction of a practical complement fixation test by Wassermann, Neisser and Bruck,[2] in 1906, serologists and clinicians have directed their efforts toward modifications of that procedure in the hope of developing a laboratory method that will retain the obvious advantages of the Wassermann test and eliminate the well-known difficulties encountered in its performance.

The precision and care with which the various ingredients entering into complement fixation have to be titrated are well known. The main difficulty, however, is that, after these titrations have been properly carried out, there still remain numerous variants which are potential sources of error. The most common error arises from the fact that the important reagent, namely, complement, tends to deteriorate with relative rapidity. Since the test is based on the disappearance of complement activity, it is evident that the possibility of mistaking complement deterioration for specific action is always present. A second frequent source of error is found in the occasional partially anticomplementary action of the serum. In such cases, the serum will absorb some complement without antigen. Assuming that a strongly anticomplementary serum is readily detectable by means of proper controls, partially anticomplementary serums are not so easily controlled, and therefore may lead to false positive results. Finally, many serums contain natural hemolysin, which would obviously lead to false negative results.

These, and many other technical difficulties undoubtedly explain why, in spite of the fact that the Wassermann reaction has now been in use more than fifteen years, it is not, as yet, wholly dependable.

In order to overcome the numerous difficulties encountered in the performance of this test and in the interpretation of the results, various biochemical procedures have been introduced in recent years. Among these, several precipitation reactions have been advanced, which gave promise of simplification and general usage.

* Studies and contributions of the Department of Dermatology and Syphilology of the University of Michigan, service of Dr. Udo J. Wile.

* Read before the Section on Dermatology and Syphilology at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

1. Kahn, R. L.: A Simple Quantitative Precipitation Reaction for Syphilis, Preliminary Communication, Arch. Dermat. & Syph. **5**: 570 (May) 1922; Second Communication, ibid., **5**: 734 (June) 1922; Third Communication, ibid., to be published; Effect of Dilution on Precipitation Reaction for Syphilis Proposed by Author, Proc. Soc. Exper. Biol. & Med. **19**: 131 (March 15) 1922; Relation between Serum and Antigen in Precipitation Reaction for Syphilis Proposed by Author, ibid. **19**: 132 (March 15) 1922.

2. Wassermann, Neisser and Bruck: Eine serodiagnostische Reaktion bei Syphilis, Deutsch. med. Wchnschr., 1906, p. 745.

These reactions have been favorably commented on in Germany, but, judging from the paucity of the literature, have attracted little attention in England and in this country. The first precipitation reactions of practical application were those described by Meinicke [3] in 1917, and by Sachs and Georgi [4] in 1918. The main difficulty with these reactions lies in the fact that the end-results are read after forty-eight hours' incubation; at the end of such time, serums frequently show sufficient contamination to lead to false interpretations.

For the foregoing reason, Dreyer and Ward [5] in England, and Kahn in this country, came to the conclusion that neither of these two reactions can be utilized as a practical diagnostic test for syphilis.

Dreyer and Ward [5] introduced a precipitation reaction which requires such elaborate care in preparation and dilution of its antigens, and so many tubes for each test (nine), that it offers no practical advantages over the Wassermann technic.

A still more recent precipitation test has been proposed by Wang.[6] This test embodies the use of an antigen, which shows slight turbidity on diluting with physiologic sodium chlorid solution, thus obviously rendering difficult the reading of sharp end-results. In our opinion, for a practical precipitation reaction, both the antigen and the serum should be absolutely clear. Under such conditions only can the formation of a precipitate, after mixing the two substances, be presumed to be specific.

The precipitation reaction employed in this study not only meets the requirement with regard to the employment of a clear antigenic solution, but, in addition, possesses other advantages which we believe will meet with favor. For example, the test can be carried out with relative simplicity, and the final precipitate is readily visible to the naked eye. Also, in strongly positive serums, spontaneous flocculation occurs, enabling interpretation as soon as the reagents are thoroughly mixed.

The Kahn reaction further distinguishes itself from other precipitation reactions by these salient features:

1. The serum is employed in an undiluted form, it having been shown by Kahn that diluting the serum with salt solution delays the rapidity of the reaction.

2. The antigen is prepared so as to contain a high content of antigenic material. This is attained by using an alcoholic extract of dried heart muscle, which has been previously extracted with ether, thus removing fat and other nonspecific substances.

3. The antigen is diluted for the test with approximately the smallest amount of physiologic sodium chlorid solution which will hold it in solution, rendering it thereby susceptible to precipitation when mixed with positive serum.

4. The antigen and serum are employed in that relationship which will, in the author's opinion, result in maximum precipitation.

These features give this reaction such a high degree of sensitiveness that the strongly positive serums react spontaneously in most cases.

3. Meinicke, E.: Ueber eine neue Methodik der serologischen Luesdiagnostik, Berl. klin. Wchnschr. **54**: 613, 1917; Ueber Theorie und Methodik der serologischen Luesdiagnostik, ibid., 1918, No. 4, p. 83; Zur Methodik der serologischen Luesdiagnostik, München. med. Wchnschr. **65**: 1379, 1918; Ueber die dritte Modifikation meiner Luesreaktion, ibid., 1919, No. 33, p. 932.

4. Sachs, H., and Georgi, W.: Zur Serodiagnostik der Syphilis mittels Ausflockung durch cholesterinierte Extrakte, Med. Klin., 1918, No. 33, p. 805.

5. Dreyer, Georges, and Ward, H. K.: A Simple Quantitative Serum Reaction for the diagnosis of Syphilis, Lancet **1**: 956 (May 7) 1921.

6. Wang, C. Y.: A Precipitation Test for Syphilis, Lancet **1**: 274, 276 (Feb. 11) 1922.

THE METHOD

Preparation of the Antigens.—Fresh beef heart is freed from fat, fiber and blood vessels, and passed several times through a meat chopper. It is then spread in a thin layer on a porcelain platter and dried by means of a revolving fan. The dried material is broken into small particles and passed three times through a coffee grinder. Fifty grams of the dried heart muscle is then placed in a 500 c.c. Erlenmeyer flask; sufficient ether is added to cover the dried material with an inch of fluid, and it is placed in the icebox. After twenty-four hours' extraction, the supernatant ether is quite yellowish; it is then poured off and replaced with fresh ether. This is repeated daily for three days. On the fourth day, the supernatant ether is water clear. The ether is then filtered off and the ground muscle spread on paper and dried at room temperature until no odor of ether is detectable. This requires several hours' drying.

To 20 gm. of this material, 100 c.c. of absolute alcohol is added, and the whole extracted for nine days in the icebox and one day at room temperature. After this period, the alcoholic extract is filtered off. A total of 70 c.c. of alcoholic antigen is usually thus obtained. To half this quantity is added 140 mg. of cholesterin, which is dissolved by rotating the flask. The other 35 c.c. is used as a control noncholesterinized antigen.

Dilution of Antigen for the Tests.—The antigens thus prepared are diluted for the tests as follows: From 0.5 to 1 c.c. of the cholesterinized antigen is pipetted into an agglutination tube, inner diameter about three-eighths inch (10.5 mm.), depending on the amount needed for the group of tests. Three times the amount of physiologic sodium chlorid solution (0.85 per cent.) is then measured into a 10 c.c. cylinder. This solution is rapidly poured into the agglutination tube and promptly inverted back and forth. The noncholesterinized antigen is diluted in a similar manner except that two parts of physiologic sodium chlorid solution to one part of antigen are employed. Both of these mixtures appear clear and opalescent. They are used in most cases within an hour after dilution. On several occasions, the antigens were used several days after mixing, having been kept in the incubator during that time. However, this older antigen did not seem to be as sensitive as that used shortly after the addition of the physiologic sodium chlorid solution. It is, therefore, desirable to use fresh dilutions of the antigen for each day's tests.

TABLE 1.—CLASSIFICATION OF CASES

	Condition	Number of Cases
1.	Primary syphilis	12
2.	Secondary syphilis	15
3.	Tertiary syphilis, excluding cerebrospinal	19
4.	Cerebrospinal syphilis	52
5.	Congenital syphilis	15
6.	Latent syphilis	80
7.	Other than syphilis	157
	Total	350

The serum was separated by rapid centrifugation, and inactivated for one-half hour in the water bath at 56 C. It was then ready for use.

Performance of the Test.—Three-tenths cubic centimeter of serum is measured into each of two agglutination tubes. To the first tube 0.05 c.c. of the diluted cholesterinized antigen is added, and the same quantity of the noncholesterinized mixture is added to the other. The remainder of the serum is carried along with the procedure as a control. The rack of tubes is vigorously shaken for three minutes. At this point, strongly reacting serums show definite precipitation, particularly with the cholesterinized antigen. These are recorded as spontaneous precipitations.

The rack is then placed in the incubator (37.5 C.) and permitted to remain overnight, in order to bring out precipitation in the relatively weaker serums. The results are read the next morning without again shaking the rack. The precipitates, being suspended in the clear serums, can be seen with comparative ease.

The results are recorded in accordance with the following scale:

1. A precipitate, consisting of one or more large clumps = ++++.
2. A large flocculent precipitate = +++.
3. Moderate-size flocculi or granules = ++.
4. Small-size flocculi or granules = +.
5. Fine flocculi or granules = ±.
6. Negative precipitation = —.

TABLE 2.—PRIMARY SYPHILIS

Case	Kahn Reaction	Wassermann Reaction: 12-Hour Fixation Icebox	Wassermann Reaction: 1-Hour Fixation Icebox	Treatment
1	++++ (spontaneous reaction)	++++	++++	None
2	++++ (spontaneous reaction)	++++	++++	None
3	++++ (spontaneous reaction)	++++	++++	None
4	++++ (spontaneous reaction)	++++	++++	None
5	++++ (spontaneous reaction)	++++	++++	None
6	++++ (spontaneous reaction)	++++	++++	Indifferent
7	++++ (spontaneous reaction)	++++	+	Indifferent
8	++	+++	++	Indifferent
9	++	++	—	Thorough
10	++	—	—	Thorough
11	—	—	—	Thorough
12	—	—	—	None

When working with strongly positive serums, it was observed that a precipitation ring frequently formed at the point of juncture of the serum and diluted antigen, a few minutes after adding the latter. This suggested the possibility of developing a ring modification with this precipitation reaction. A series of experiments was then performed in which, after the addition of the antigen to the serums, the mixture was placed in the incubator without shaking the tubes. The diluted antigen, being lighter than the serum, formed a layer over the latter, which was readily

TABLE 3.—SECONDARY SYPHILIS

Case	Kahn Reaction	Wassermann Reaction: 12-Hour Fixation Icebox	Wassermann Reaction: 1-Hour Fixation Icebox	Treatment
1	++++ (spontaneous reaction)	++++	++++	None
2	++++ (spontaneous reaction)	++++	++++	None
3	++++ (spontaneous reaction)	++++	++++	None
4	++++ (spontaneous reaction)	++++	++++	None
5	++++ (spontaneous reaction)	++++	++++	None
6	++++ (spontaneous reaction)	++++	++++	None
7	++++ (spontaneous reaction)	++++	++++	Indifferent
8	++++ (spontaneous reaction)	++++	++++	Indifferent
9	++++ (spontaneous reaction)	++++	++	None
10	++++	++++	++	Indifferent
11	+++	++++	—	Thorough
12	++	++++	++	None
13	++	++++	+	Thorough
14	++	++	+	Indifferent
15	++	—	—	Thorough

visible. Incubation intensified this reaction; but it was noted that not infrequently many moderately positive serums reacted negatively with this procedure, and positively when the regular procedure was employed. This fact would seem to enhance the importance of thoroughly mixing the serum and antigen. Vigorous shaking apparently brings the combining elements of the serum and antigen into closer contact, thereby hastening the reaction.

Clinical Material.—The cases studied can be classified as shown in Table 1.

The cases other than syphilis included, for the most part, the more common conditions seen in a dermatologic dispensary, such as the infectious granulomas, carcinoma, papulosquamous conditions, eczema, acne vulgaris and allied dermatoses.

Comparison with Wassermann Reaction.—Aside from running a precipitation reaction on each serum, a quantity of blood was submitted from each patient to the Wassermann laboratories of the state psychopathic hospital at Ann Arbor, and to the state department of health at Lansing. It seemed desirable not only to investigate the value of this precipitation test in the diagnosis of syphilis, but also to learn to what extent it compares with the Wassermann test as carried out in two different standard laboratories.

It should be stated that there is an important technical difference between these two Wassermann tests;

TABLE 4.—TERTIARY SYPHILIS (EXCLUDING CEREBROSPINAL)

Case	Kahn Reaction	Wassermann Reaction: 12-Hour Fixation Icebox	Wassermann Reaction: 1-Hour Fixation Icebox	Treatment
		Cutaneous		
1	++++ (spontaneous reaction)	++++	++++	None
2	++++ (spontaneous reaction)	+++	++++	None
3	++++ (spontaneous reaction)	++++	++++	Indifferent
4	++++ (spontaneous reaction)	++++	+++	Indifferent
5	++++	++++	+	Indifferent
6	+++	++++	+	Indifferent
7	++	++++	+++	Indifferent
8	++	++++	++	Indifferent
9	—	—	—	Indifferent
		Osseous System		
1	++++ (spontaneous reaction)	++++	++++	None
2	++++ (spontaneous reaction)	++++	++	None
3	+++ (spontaneous reaction)	+++	±	Indifferent
4	+	—	—	None
5	—	—	+	Indifferent
6	—	—	—	None
		Visceral		
1	++++ (spontaneous reaction)	++++	++++	None
2	++++	++++	+	Thorough
3	++++	+++	++	Thorough
4	++++	++	++	None

in the state laboratory the period of complement fixation with the cholesterinized antigen is one hour in the icebox,[7] while the complement fixation period with a similar antigen at the psychopathic hospital is twelve hours in the icebox.

The accompanying tables show the results of the Kahn test, as compared with two standard Wassermann tests, in 350 cases.

Primary Syphilis.—It will be seen from Table 2 that more than 50 per cent. of the cases examined reacted spontaneously. Also, there is agreement in the three reactions in 66⅔ per cent. of the twelve cases studied. The remaining 33⅓ per cent. show a sensitiveness in favor of the Kahn reaction.

The serum in Case 10 was taken shortly after an intensive course of therapy, and followed a ++++ Wassermann reaction before the inauguration of treatment. The lesion was rapidly involuting when first seen. This serum is interesting in that, notwithstanding the institution of treatment, it is still ++ positive

7. Kahn, R. L.: Optimum Conditions of Fixation of Complement in the Wassermann Test, Arch. Dermat. & Syph. 4: 358 (Sept.) 1921.

to the Kahn reaction, while negative to the Wassermann tests.

Case 9, a chancre of the lip, following intensive treatment, is positive to the precipitation and long icebox fixation reactions, but negative in the shorter incubation Wassermann. This patient still has residual induration six months after infection.

Secondary Syphilis.—In this group, the greatest proportion of spontaneous reactions are found. The three tests show agreement in eight of the fifteen serums examined. In the other seven cases, the Kahn reaction compares favorably in point of sensitiveness.

In Case 15, in which the test is still positive with the precipitation reaction, but negative with the Wassermann tests, the patient had just completed an intensive course of arsphenamin.

TABLE 5.—CEREBROSPINAL SYPHILIS*

Case	Kahn Reaction	Wassermann Reaction: 12-Hour Fixation Icebox	Wassermann Reaction: 1-Hour Fixation Icebox	Treatment
		Diffuse Type		
1	++++ (spontaneous reaction)	++++	++	Thorough
2	++++	++	++++	Indifferent
3	+++	++++	+++	Indifferent
4	+++	++++	++	Indifferent
5	+++	++++	++	None
6	+++	++++	+	Thorough
7	+++	+++	—	Indifferent
8	+++	±	+	Thorough
9	++	++++	++++	Thorough
10	++	++++	—	Thorough
11	++	++++	++	Thorough
12	++	++	—	Indifferent
13	++	—	±	Thorough
		Tabes Dorsalis		
1	++++ (spontaneous reaction)	++++	+++	None
2	++++ (spontaneous reaction)	++++	++	None
3	++++ (Spontaneous reaction)	++++	++	Thorough
4	+++ (Spontaneous reaction)	+++	+	Thorough
5	++++	++	++	Thorough
6	++++	+	—	Thorough
7	+++	++++	++	Indifferent
8	++	++	+	Indifferent
9	++	+	—	Thorough
10	—	++	—	Thorough
		General Paresis		
1	++++	++++	+	Thorough
2	+++	++++	++	Indifferent
3	+++	++++	+	Thorough
4	++	++++	+	Thorough
5	++	++++	+	Thorough
6	+	++	—	Thorough

* This group, which numbered fifty-two cases, completely agreed in the three reactions in 45 per cent.

Tertiary Syphilis.—In late cutaneous syphilis, it will be seen that the Kahn reaction is not as sensitive as the Wassermann with the longer period of icebox fixation. It is, however, more sensitive than the Wassermann reaction with the short incubation period. In this connection, it should be noted that the latter Wassermann reaction is weaker, notwithstanding that this group of cases had been indifferently treated.

In the serums examined from patients with late bone and joint involvement, the Kahn reaction again compares very favorably with the two Wassermann reactions.

Case 4 is one of septal perforation. One year ago, this patient had a ++++ Wassermann reaction. There has been no therapy in the interim, and at the present time the precipitation test is weakly positive, with both Wassermann reactions negative.

Case 5, an old gummatous periostitis, was indifferently treated. This patient's serum, however, is negative with the Kahn test, as well as with the Wassermann test of the long incubation period, and positive with the Wassermann reaction, short fixation period. At the time the blood was drawn, the patient had a temperature elevation of 4.5 degrees from an undetermined cause.

Case 6 is an old specific perforation of the hard palate. Here the Kahn test does not appear more sensitive than the Wassermann, all three being negative.

TABLE 6.—CONGENITAL SYPHILIS

Case	Kahn Reaction	Wassermann Reaction: 12-Hour Fixation Icebox	Wassermann Reaction: 1-Hour Fixation Icebox	Treatment
1	++++ (Spontaneous reaction)	++++	++++	None
2	++++ (Spontaneous reaction)	++++	++++	None
3	++++ (Spontaneous reaction)	++++	++++	Indifferent
4	++++ (Spontaneous reaction)	++++	++++	Indifferent
5	++++ (Spontaneous reaction)	++++	++++	Indifferent
6	++++ (Spontaneous reaction)	++++	—	Thorough
7	++++	++++	+++	Thorough
8	++++	++++	++	Thorough
9	++++	++++	++	Indifferent
10	+++	++++	++	Thorough
11	+++	++++	++	Thorough
12	++	++++	+	Thorough
13	++	—	—	None
14	+	—	—	Thorough
15	+	—	—	Thorough

In the few cases of visceral involvement studied, the Kahn test, as may be seen from the table, was slightly more sensitive than either Wassermann test.

Cerebrospinal Syphilis.—Of the fifty-two cases studied, twelve, or 23.07 per cent., showed spontaneous precipitation. Only five of the spontaneous reactions are presented, as the other seven showed complete agreement in the three tests. Table 5 presents only the variations, from which it will be seen that the Kahn reaction again compares favorably with the more sensitive Wassermann test.

TABLE 7.—LATENT SYPHILIS*

Case	Kahn Reaction	Wassermann Reaction: 12-Hour Fixation Icebox	Wassermann Reaction: 1-Hour Fixation Icebox	Treatment
1	+++	++++	—	Thorough
2	+++	++	—	None
3	+++	+++	±	Indifferent
4	+++	+	+	Indifferent
5	+++	±	±	Indifferent
6	++	++++	—	Indifferent
7	++	+++	±	Thorough
8	++	++	—	Thorough
9	++	±	—	None
10	++	±	—	Thorough
11	++	—	—	Thorough
12	++	++	±	Thorough
13	++	++++	±	Indifferent
14	++	±	±	Thorough
15	+	+++	—	Thorough
16	+	—	—	Thorough
17	+	—	—	Thorough
18	+	++++	—	Indifferent
19	—	++	±	Thorough

* This group, which numbered eighty cases, completely agreed in 60 per cent. and practically agreed in 16.3 per cent. Only the divergences are shown in this table.

Cases 8 and 13 of the diffuse cerebrospinal syphilis, both of which were thoroughly treated, nevertheless gave a stronger reaction with the simple precipitation method than with either Wassermann test.

In tabes dorsalis, similar favorable comparison will be seen, although a negative reaction was obtained in Case 10, in which one Wassermann was also negative.

In the general paresis, the precipitation test is slightly less sensitive in comparison with the long icebox fixation Wassermann reaction, but markedly more sensitive than the short icebox fixation Wassermann test.

Congenital Syphilis.—From Table 6, it will be observed that the Kahn reaction is slightly more sensitive than either Wassermann test in congenital syphilis.

Case 13 is that of a girl 16 years of age, who shows unquestionable stigmas, but has been repeatedly negative to many Wassermann tests. The patient's serum, on two examinations, gave a positive result with the precipitation test, being negative with the Wassermann reaction.

Cases 14 and 15 show a sensitiveness in favor of the Kahn reaction. They are both cases of congenital syphilis in children who had been intensively treated for one year.

Latent Syphilis.—Of the eighty cases studied, seventeen, or 21.2 per cent., gave spontaneous reactions, none of which are shown in Table 7.

The greater sensitiveness of the precipitation reaction, as compared to both Wassermann reactions, is met in this group. Cases 11, 16 and 17 would have been passed as cured, or nonsyphilitic, on the basis of the two Wassermann tests, but were detected by the precipitation reaction. Cases 2, 8, 9, 10, 15 and 18 would have been interpreted as negative, or cured, by the shorter incubation Wassermann reaction, weakly positive by the longer fixation, and positive in each case with the precipitation reaction.

The sole exception is Case 19, in which a thoroughly treated patient reacted negatively with the precipitation reaction, positively with one Wassermann reaction, and doubtfully positive with the second Wassermann.

It may be noted that, in a few of the cases in this table, the longer fixation Wassermann test shows a slightly stronger degree of positiveness than the precipitation test.

TABLE 8.—NONSYPHILITIC CONTROL SERUMS*

Case	Kahn Reaction	Wassermann Reaction: 12-Hour Fixation Icebox	Wassermann Reaction: 1-Hour Fixation Icebox	Diagnosis
1	++	—	—	Acne vulgaris, sebaceous cysts
2	+	—	—	Variola
3	+	—	—	Pyodermia, diabetes mellitus

* Of the total number of nonsyphilitic control serums examined, there was complete agreement in 154. The three variants are shown.

In this important group of asymptomatic cases, the precipitation reaction is apparently more dependable as a diagnostic procedure than the Wassermann test.

Nonsyphilitic Control Serums.—Of 157 dermatologic cases employed as controls, 154 were uniformly negative. As shown in Table 8, three cases were negative with both Wassermann reactions. Case 1 showed a ++ Kahn reaction and Cases 2 and 3, a +. These were, respectively, cases of acne, variola and diabetes. We were unable to explain these comparatively weak positive findings in apparently negative cases.

CONCLUSIONS

1. The clinical application of the Kahn precipitation test compares favorably in sensitiveness with the standard Wassermann reaction.

2. It has obvious great advantages over the Wassermann reaction in: (1) simplicity of procedure, (2) rapidity of reading, and (3) reduction of the sources of error through elimination of a hemolytic system.

3. Its obvious advantages over other precipitation reactions lie in the visibility of the precipitate to the naked eye, and the frequent spontaneous reactions with strongly positive serums.

4. Further confirmatory tests, demonstrating parallelism with the Wassermann reaction, may well lead to the eventual abandonment of the latter in favor of the simpler precipitation procedure.

5. As a last advantage, a test embodying only one reagent plus a serum offers a greater possibility of standardization.

STUDIES IN ASYMPTOMATIC NEUROSYPHILIS

IV. THE APPARENT RÔLE OF IMMUNITY IN THE GENESIS OF NEUROSYPHILIS*

ALBERT KEIDEL, M.D.
BALTIMORE

The operation of immune reactions in syphilis has long been suspected, speculation centering for the most part on the mechanism involved in various clinical phenomena associated with the course of the disease. The laws formulated by Colles and Profeta were early pronouncements of such a conception, and the refractoriness of infected individuals to reinoculation still forms one of the bases on which modern theories are founded. The periodicity with which clinical manifestations make their appearance from the beginning to the end of the disease, and the regular manner in which the earlier lesions particularly undergo spontaneous involution, suggest that the latter are outward expressions of a mechanism which spasmodically protects the individual from the infection, but which is unable in the vast majority of cases completely to eradicate it. Related phenomena associated with the ability of the organisms to produce increasingly harmful results are observed in the later manifestations of the disease, as witnessed by the greater degree of tissue reaction in response to insignificant toxic stimulation. The former phenomena point to a protective immunity, and the latter to a sensitizing (immunity) reaction.

IMMUNITY IN SYPHILIS FROM CLINICAL AND EXPERIMENTAL STANDPOINTS

The manner in which these mechanisms operate is as yet little understood. Immunologic studies of the body fluids have thrown little if any light on the problem, although much work has been expended along this line. Circulating antibodies directed against the treponemes apparently are not present in the blood stream; at least, we have no direct evidence that such neutralizing substances are produced in sufficient amounts to be effective. Indirectly, superinoculation experiments suggest this type of immunity, but a causal relationship still remains to be demonstrated. Aviru-

* From the Syphilis Department of the Medical Clinic, Johns Hopkins Hospital.
* This investigation has been aided by grants from the United States Interdepartmental Social Hygiene Board, and the American Social Hygiene Association.
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lence of culture pallida and group reactions with nonspecific treponemes and spirochetes add difficulties to this line of research.[1]

The limitation of justifiable experimentation in human subjects practically closes this field of investigation, so that the pursuit of data in the living subject is narrowed to the field of animal syphilis, more particularly rabbit syphilis. In this animal, syphilis is manifested by local and by metastatic lesions which conform somewhat remotely to types observed in human syphilis, but differ from the latter in intensity of reaction, variety, and in the order of their appearance. In other respects, however, the course of the disease and the maintenance of the infection present striking points of similarity.

In this country, at least, most of the data bearing on immunity derived from this source have resulted from the investigations and conceptions of Brown and Pearce. From the enormous amount of data which they have accumulated, two groups of observations stand out prominently in this connection, on account of the light which they throw on the mechanism of immunity.[2] The groups of phenomena have the force of laws in that they occur regularly and are controllable within the limits of experimentation. I refer to the phenomena described as the "law of progression" and the "law of inverse proportions." According to the former, various tissue groups are not equally susceptible and reactive to syphilitic infection, so that in the generalized infection the response of certain tissue groups proceeds in an orderly sequence. This is subject only to modifying influences due to interference with the course of infection. Such interference may confer protection on tissue groups which ordinarily are early involved, and may bring into reaction groups occupying positions further on in the sequence. These experiments are particularly interesting to us because syphilis of the eye, which is usually one of the latest tissue groups to be involved in rabbits, frequently occurs and recurs under conditions which confer the greatest protection on other tissue groups. This indicates not only a low susceptibility of this group to the infection, but both an inherent inability for defense, and a lack of protection by the general reaction. The authors suggest the possible bearing of this observation on the genesis of neurosyphilis.

By the "law of inverse proportions" is meant an inverse quantitative relationship that exists in the intensity of consecutive reactions to syphilitic infection. It has been shown that the local primary tissue reaction following inoculation plays a dominating rôle in the elaboration of defense. Suppression of this local reaction by whatever means modifies the animal's status so that clinical manifestations of generalized syphilis usually develop. Conversely, the greater the local primary reaction and the more extensive the resulting primary lesion, the less likely are generalized clinical manifestations to occur. In other words, focal lesions by intensive reaction confer protection on tissue remotely situated about other foci of infection. Subcurative doses of treponemocidal drugs by suppressing the initial lesion produce this inverse condition in rabbits: an observation analogous to what is observed when human syphilis is inadequately treated during the primary and early secondary periods. The significance of this analogy is the more obvious when it is remembered that the period of chancre in the rabbit ordinarily is the only early reaction, and therefore corresponds to the entire period in the human being during which primary and early secondary reactions appear.

1. Zinsser, Hans, and Hopkins, J. G.: Antibody Formation Against Treponema Pallidum Agglutination, J. Exper. Med. **21**: 576, 1915. Zinsser, Hans; Hopkins, J. G., and McBurney, M.: The Difference in Behavior in Immune Serum Between Cultivated Nonvirulent Treponema Pallidum and Virulent Treponemata from Lesions, J. Exper. Med. **23**: 341 (March 1916. Kolmer, J. A., and Broadwell, S.: The Relation of Luetin Skin Reaction to Immunity in Syphilis (Including Treponemecidal Action of Human Serum in Syphilis), J. Immunol. **1**: 429 (Aug.) 1916.

2. Brown, W. H., and Pearce, L.: The Resistance (or Immunity) Developed by the Reaction to Syphilitic Infection, Arch. Dermat. & Syph. **2**: 675 (Dec.) 1920; Experimental Production of Clinical Types of Syphilis in the Rabbit, ibid. **3**: 254 (March) 1921.

INFLUENCE ON SYPHILIS OF CENTRAL NERVOUS SYSTEM

As these phenomena are identical with those observed in human syphilis, they may be accepted as fundamental. The central nervous system occupies a position toward the end of a tissue group sequence, because it is not only less susceptible, but also less reactive. It is in this sense that neurosyphilis differs fundamentally from other tissue reactions in syphilis. The incidence and gravity of neurologic reaction is regulated by antecedent tissue reactions in other parts of the body, either by a degree of protection conferred, or by the lack of such protection. The influence of immunity on the genesis of neurosyphilis is greater or less, therefore, because of the operation of the "law of inverse proportions." The secondary phenomenon of hypersensitiveness, however, operates here as it does elsewhere in tissue groups, with the difference due to the remote position in the sequence which nervous tissue occupies, so that hypersensitiveness has greater force because of its fuller development. If there is a normal condition of susceptibility and reactivity of nervous tissue, therefore, neurosyphilis will depend on the balance between the infection, on the one hand, and the protective and hypersensitive immune reactions, on the other.

Investigations of numerous observers make it probable that the central nervous system is invaded in all patients contracting syphilis. Clinically, however, we know that less than 50 per cent. of these patients are neurosyphilitic. In the syphilis department of the Johns Hopkins Hospital, 21 per cent. of all late syphilitics, including cases of latent syphilis, present definite clinical neurosyphilis on admission. In addition to this, 21.6 per cent. of late syphilitics with apparently normal nervous systems have definite abnormalities in the cerebrospinal fluid permitting the diagnosis of late asymptomatic neurosyphilis, making a total of 42.6 per cent. of all patients with late acquired syphilis who are actively neurosyphilitic. This figure represents the percentage of all late syphilitics in our clinic who have failed to acquire an immunity sufficient to suppress the neurologic invasion.

PROTECTION OF NEURAXIS BY IMMUNE REACTIONS

Evidence of immune protection is suggested in an additional 17.7 per cent. of all late syphilitics. These are patients presenting minor neurologic abnormalities not in themselves diagnostic of neurosyphilis, but suggestive indications of early neurologic damage, in whom the spinal fluid is nevertheless normal. In view of what we already know, it is probable that these are instances of neurolatency, the so-called "burnt out" neurosyphilis in which spinal fluid abnormalities have disappeared. The remaining 39.7 per cent. are patients

with apparently normal cerebrospinal fluids, in whom neurolatency has developed without demonstrable neurologic damage, or who have developed protection before damage has been done.

Viewed from another angle, we have been able to show by statistical studies [3] that in early asymptomatic neurosyphilis the character of antecedent tissue reactions markedly modifies the incidence of cerebrospinal fluid abnormalities. Thus, patients who have had mild or average generalized outbreaks show evidence of neurologic damage with greater frequency than do those who had severe secondary lesions. In late syphilis, also, it is significant that the incidence of late asymptomatic neurosyphilis is only 18.4 per cent. in the patients presenting tertiary lesions outside the central nervous system, compared with 24.6 per cent. in patients free from such lesions.

INFLUENCE OF ADEQUATE AND OF INADEQUATE TREATMENT

The figures arrived at in these studies, however, do not represent the influence of natural immunity only, but must be revised by determining the influence of at least two other factors, namely, early treatment and pregnancy. The influence of treatment on the development of immunity depends on the degree of the patient's preliminary reaction to the infection, on the time at which treatment is begun, and on the intensity, continuity and duration of the therapeutic attack. The immediate effect of treatment in primary and early secondary syphilis is depressant on the mechanism of immunity, possibly to the extent of producing a negative phase in sensitized patients, because it serves to destroy the excitant to immunity production before the process has reached protective proportions. A short course of intensive treatment in these cases, insufficient to destroy the infection completely, produces a condition of low infectivity with little or no protection, analogous to that produced in the experimental animal by a subcurative dose of arsphenamin. As a result, it might be predicted that such patients may later develop grave lesions, especially in tissues ordinarily late to be involved. That this does happen is demonstrated by a study of the incidence of neurorecurrences in such a group in this clinic. Of approximately 800 inadequately treated patients with early syphilis, about 5 per cent. developed neurorecurrences within the first months of the disease.[4] Furthermore, a study of a large number of cases of early syphilis insufficiently treated shows an incidence of early asymptomatic neurosyphilis three times greater than that in adequately treated patients.[3]

On the other hand, prolonged courses of adequately intensive, continuous early treatment have the effect of greatly reducing the incidence of neurosyphilis. As this more especially represents a causal effect other than that due to immune reactions, it need not be illustrated here. It has been suggested, however, that this type of treatment protects the patients not only by virtue of its parasiticidal action, but possibly also by increasing eventually the activity of the natural protective processes.[5] Concerning the latter action, there is as yet insufficient evidence of a positive character so that it is hardly justifiable to attempt to evaluate its influence at this time. If the initial reaction to the infection has been vigorous and extensive before treatment is begun, and the time relation necessary for the elaboration of immunity has not been disturbed, a short course of treatment seldom, if ever, leads to neurorecurrences, and the incidence of abnormalities in the cerebrospinal fluid is not increased.

POSSIBLE RELATION OF PREGNANCY TO IMMUNE PROCESSES

The relative infrequency of clinical neurosyphilis in women as compared with men is a matter of common observation. In spite of the fact that, in early syphilis, invasion of the neuraxis occurs with equal frequency in the two sexes, three times as many men as women develop clinical manifestations of neurologic damage. In searching for the explanation of this apparently anomalous condition, pregnancy as the chief point of difference in the life history of the two sexes has been investigated by Moore of this clinic.[6] Pregnancy greatly modifies the reaction to syphilitic infection, the tendency being to suppress lesions and induce latency. The incidence of neurosyphilis in women who have been childless is equal to that in men, while its incidence in women who had been pregnant since their initial infection is only half that of the nonpregnant group.

This protection conferred through pregnancy may be a distinct mechanism apart from natural immunity, or it may be the result of altered conditions leading to a more pronounced development of the natural protective mechanism. It is, nevertheless, a factor of great importance in the natural protection of syphilitic women.

SUMMARY

Since neural invasion occurs in probably all cases of early syphilis, and the incidence of late symptomatic and asymptomatic neurosyphilis is limited, it is probable, if not certain, that immune reactions protect the neuraxis. The character of the early tissue reaction to syphilitic infection, the intensity, continuity and duration of the therapeutic attack, and the occurrence of pregnancy in women, markedly modify the incidence of neurosyphilis, both clinical and asymptomatic. An analogy exists between these factors in human syphilis and the laws of progression and inverse proportions in animal syphilis.

3. Moore, J. E.: Studies in Asymptomatic Neurosyphilis, II, The Classification, Prognosis and Treatment of Early Asymptomatic Neurosyphilis, Bull. Johns Hopkins Hosp. **33**: 231 (July) 1922.

4. Zimmermann, E. L.: Neurorecurrences after Arsphenamin, Arch. Dermat. & Syph. **5**: 723 (June) 1922.

5. Toyama, I., and Kolmer, J. A.: The Influence of Arsphenamin and Mercuric Chloride upon Complement Antibody Production, J. Immunol. **3**: 301 (July) 1918 (extensive bibliography).

6. Moore, J. E.: Studies in Asymptomatic Neurosyphilis, III, The Apparent Influence of Pregnancy on the Incidence of Neurosyphilis in Women, Arch. Int. Med., to be published.

Shamanism.—The modern Koreans are said to number their demons by "thousands of billions." Among savages such beliefs usually go hand in hand with shamanism, an intermediate stage between polytheism and monotheism, which assumes a Supreme Being or Great Spirit, with lesser divinities and demons subordinated. With the beginnings of shamanism, we have everywhere the advent of the medicine man and the bilbo or witch-doctor, who assumes a solemn supervisory relation to disease and its cure not unlike that of priest to religion. The shaman handles disease almost entirely by psychotherapeutic maneuvers, which serve to awaken a corresponsive state of autosuggestion in his patients. . . . To prevent future attacks, in other words to keep the demon away for the future, he provides his patient with a special fetish or amulet to be worn or carried about his person. . . . We may smile at these phases of shamanistic procedure, but, except for the noise, they are not essentially different from the mind-medicine or faith-healing of our own day.—Garrison, F. H.: History of Medicine.

FLUMERIN—A NEW MERCURIAL FOR THE INTRAVENOUS TREATMENT OF SYPHILIS

FIRST REPORT OF CHEMICAL, ANIMAL AND CLINICAL EXPERIMENTS AND RESULTS*

EDWIN C. WHITE, PH.D.
JUSTINA H. HILL, M.S.
JOSEPH EARLE MOORE, M.D.
AND
HUGH H. YOUNG, M.D.
BALTIMORE

Experience in recent years has made it increasingly evident that the present day treatment of syphilis is not entirely satisfactory, partly owing to the fact that our attack on the disease is not sufficiently varied. It is generally agreed that efforts to improve on arsphenamin and neo-arsphenamin have been so far unavailing. It is also admitted that these drugs, either with or without mercury, constitute our most powerful antisyphilitic remedies, especially in early syphilis. In most cases (and in all instances of late syphilis) mercury in some form must be employed. A few patients, moreover, fail to tolerate the arsphenamins, and complete reliance must then be placed on mercurial treatment.

The four common methods of administration of mercury, by ingestion, intravenous injection, intramuscular injection, or inunction, are open to various objections. All these methods are of value, but all fall short of the desired ideal. As far as intravenous injection is concerned, the compounds of mercury in common use (mercuric chlorid, cyanid, oxycyanid, benzoate, succinimid) are limited in value either by comparatively high toxicity or by their local corrosive action.

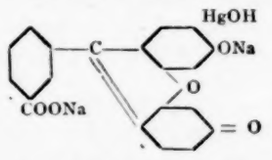
We have attempted, therefore, to develop a mercurial drug suitable for intravenous injection, in which would be combined the three factors of therapeutic value in animal and human syphilis, low toxicity and absence of local irritating qualities. The drug which forms the subject of this paper has these advantages. It is well to state that we do not believe that this drug, or any mercurial so far developed, can supplant the arsphenamins. We attempt to demonstrate only the three advantages mentioned and to suggest that further experience may show this drug to be of more value than other mercurials now in use by the intravenous route. We do not suggest that the intravenous route is the best method of administration of mercury, and we do not wish to be interpreted as advocating any special plan of treatment for syphilis.

CHEMISTRY OF FLUMERIN

The field of search lay obviously among the organic mercurials, substances in which the mercury atom is bound directly to a carbon atom. In solutions of such compounds, the mercury is in a nonionic condition. In an earlier research on penetrating disinfectants, which led to the development of mercurochrome,[1] a number of mercury derivatives of various phthaleins were prepared by one of us (E. C. W.). Laboratory tests on these compounds included, of course, determinations of their toxicity for animals; and from this standpoint the substance described in this paper stood out as having very low toxicity, although it was discarded as a local disinfectant because it did not show as marked penetration of tissue as did the other members of the series, and because it was comparatively low in bactericidal power.

Although low toxicity is perhaps the best lead in selecting a mercurial drug from a series for study in the treatment of syphilis, it must be pointed out that this property does not of itself mean that the drug will have practical usefulness. Only if it can be shown that there is a concomitant marked therapeutic effect in animals are we justified in believing that the low toxicity will be an asset of clinical value. For this reason, the present study has included a description of chemistry of the drug, toxicity determinations, a study of the effect of the drug on rabbit syphilis, and finally a careful clinical study.

Description of the Drug.—The drug is the disodium salt of hydroxymercurifluorescein[2] (whence the simplified name flu-mer-in) whose chemical formula is:



It forms a dark red powder with greenish iridescence and is easily soluble in water, especially hot water, up to about a 10 per cent. solution. The solution used clinically (2 per cent.) is stable to the air and to heat; in fact, solution of the powder is best effected by using hot water, although it is easily, though less rapidly, soluble in cold water. The powder is stable indefinitely in air, except that it is somewhat hydroscopic and should, therefore, be kept in well stoppered bottles or in ampules. As the drug has disinfecting value about equal to that of phenol, the solution may be considered self-sterilizing. Although we have used, clinically, solutions as old as 3 or 4 days, it is best to use only freshly prepared solutions made up in sterile, freshly distilled water. Exposure to the air for several hours does not alter the solution chemically. On long standing (one week or more), a slight precipitate of metallic mercury as a gray powder is sometimes seen.

Solutions of the drug give no precipitate with caustic alkali, iodids or ammonium sulphid, with the exception that the latter forms mercuric sulphid on long standing in the cold or in a short while on boiling. There is complete absence of precipitation when the solution is mixed with serum. This nonprecipitating action on protein accounts for the blandness of the drug toward tissues.

The drug contains about 32.5 per cent. of metallic mercury, as against the theoretical content of 33.8 per cent. required by the formula $C_{20}H_{10}O_6Na_2Hg$. The difference is due to moisture and a small amount of unmercurated fluorescein salt, which is quite inert.

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* From the James Buchanan Brady Urological Institute and the Syphilis Department of the Medical Clinic, Johns Hopkins Hospital.

* Read before the Section on Dermatology and Syphilology at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

1. Young, H. H.; White, E. C., and Swartz, E. O.: A New Germicide for Use in the Genito-Urinary Tract: "Mercurochrome-220", J. A. M. A. 73: 1483 (Nov. 15) 1919.

2. To avoid misunderstandings, reference is made to two German patents, Nos. 201903 and 308335, dealing with mercury derivatives of phthaleins. At this time, it is only necessary to say that the process employed in the preparation of flumerin is fundamentally different from those of the patents mentioned, and leads to an essentially different product. Discussion of the technicalities involved would be out of place here, but will be entered into in detail in a later chemical paper. It is interesting to note that Klages and Schreiber (Seventeenth International Congress of Medicine, 1913, Transaction of Section of Therapeutics, pp. 65-71) made a clinical trial of some of the patented substances, including the derivatives of fluorescein. The therapeutic effects were so slight that further clinical use was not considered.

The 2 per cent. solution is hypotonic, showing a freezing point lowering of 0.14 C. as against an average value of 0.56 C. for normal blood serum.

TOXICITY OF FLUMERIN FOR ANIMALS

Toxicity has been determined on rabbits and dogs, always using intravenous injection. Rabbits uniformly tolerate a single dose of 30 mg. per kilogram. This is often followed by the appearance of albumin or casts, or by a decrease in phenolsulphonephthalein output, or by all three. The damage is transient, and usually within a week the phenolsulphonephthalein excretion, if lowered, returns to normal, and the urinary abnormalities disappear. This dose is usually followed by definite loss in weight. Of four rabbits receiving 40 mg. per kilogram, two died within twenty-four hours, and two survived. Fifty mg. per kilogram was fatal in all cases. Repeated small doses of 5 or 10 mg. per kilogram have been given in a series of as many as twenty doses, at intervals averaging two or three days. This rarely led to any urinary abnormality or phenolsulphonephthalein decrease, although some animals lost weight under continued medication. In this respect, there is great variation among individuals. Likewise, diarrhea has been observed occasionally, but its incidence has been so variable that it cannot be linked with size or number of doses.

The toxic limit is about the same in dogs, which usually die within twenty-four hours after a single dose of 50 mg. per kilogram, although a few have survived this amount. This dose always causes violent retching and diarrhea shortly after the injection, and the animal appears very sick. Blood in the rectum and mouth has been observed in some animals dying from such an injection. Thirty mg. per kilogram is well tolerated, although there is sometimes transient evidence of kidney damage. Loss in weight is less frequent and less marked than in rabbits receiving the same dose. Repeated doses, at average intervals of two or three days, of 10 mg. per kilogram are well borne, and as many as twenty doses of 5 mg. per kilogram are well tolerated by strong, healthy dogs, with no loss in weight and no evidence of kidney injury.

On the basis of the figures given by Schamberg, Kolmer and Raiziss [3] as to the toxicity of various common mercurials suitable for intravenous injection, it is apparent that, by this route flumerin is tolerated by animals in amounts more than six times as great as any of the usual preparations; as utilized clinically, the average dose is twenty times that of the cyanid, benzoate, mercuric chlorid or succinimid, and in equivalent mercurial content is about eight times as large.

Pathologic studies on animals experimentally killed by large single doses, and sacrificed after repeated small doses, have been carried out by Drs. W. A. MacCallum and J. R. Cash. These studies, as yet incomplete, will be reported in detail in connection with a series of experimental and clinical papers to appear later.

THE VALUE OF FLUMERIN IN EXPERIMENTAL SYPHILIS

The chemotherapeutic investigations of Brown and Pearce on arsenicals, and of Schamberg, Kolmer and Raiziss on mercurials, have conclusively demonstrated that the therapeutic ratio of a given drug in protozoan infections other than syphilis, for example, trypanosomiasis, relapsing fever or chicken spirillosis, cannot be considered accurate for syphilis. Mercurials have in general little or no effect on trypanosome infections. We have, therefore, confined the testing of the therapeutic action of flumerin to syphilis in the rabbit.

This method of therapeutic experimentation has fortunately become much more accurate than formerly, because inoculations of animals with infectious material are always successful, the incubation period is well defined and a complicating cause of resolution of lesions may be eliminated by avoiding their aspiration. Most important, the former indefinite end-point of therapeutic activity, namely, the resolution of lesions and prolonged observation of the animal for relapse, has been replaced by the method of transfer of lymph nodes from treated animals to normal rabbits. This offers not only a definite end-point, but also provides more rigid criteria of cure.

Method.—Through the kindness of Dr. Wade Brown, a rabbit was secured with a testicular infection of the Nichols strain of *Spirochaeta pallida*.[4] From this rabbit, the strain has been continued by two methods. By the first,[5] an infected testicle was excised under ether anesthesia, emulsified in a small amount of sterile 0.85 per cent. salt solution, the presence of spirochetes determined by dark-field examination, and normal rabbits injected intratesticularly, in most instances unilaterally, with not more than 0.5 c.c. each of this emulsion. By the second method,[6] under ether anesthesia, the popliteal or inguinal nodes were excised, emulsified in a small amount of sterile salt solution, and, regardless of dark-field findings, normal rabbits were injected intratesticularly with not more than 0.5 c.c. each of the emulsion.

Treatment with flumerin was carried out in animals with fully developed lesions. A study of the action of the drug on very early lesions, at present in progress, indicates that it is more difficult to influence the infection at the time of first appearance of lesions than later. Treated animals, in which resolution of lesions occurred, were held under observation to allow the infection to become reestablished. If no relapse took place, transfers of the popliteal nodes were then made to the testicles of normal rabbits, which were observed for an average of seventy-nine days. If the transfer animals failed to develop lesions and if organisms could not be found in popliteal or inguinal nodes at the end of the period of observation, we felt justified in concluding that the action of the drug had been sufficient to destroy the organisms in the regional lymphatics, where Pearce and Brown [7] have shown that spirochetes may be found on and after the second day after inoculation in untreated animals. Careful controls were made on every series of experiments.

Experiments.—Our experiments have fallen into two groups: animals treated with repeated small doses, and those treated with single large doses. In every case, the drug was given intravenously. The tolerated single dose of flumerin for rabbits by this method is, as has been stated, 30 mg. per kilogram.

3. Schamberg, J. F.; Kolmer, J. A., and Raiziss, G. W.: A Study of the Comparative Toxicity of the Various Preparations of Mercury, J. Cutan. Dis., December, 1915.

4. Nichols, H. J., and Hough, W. H.: Demonstration of Spirochaeta Pallida in the Cerebrospinal Fluid, J. A. M. A. **60**: 108 (Jan. 11) 1913.

5. Brown, W. H., and Pearce, Louise: Experimental Syphilis in the Rabbit, I, Primary Infection in the Testicle, J. Exper. Med. **31**: 475 (April) 1920.

6. Brown, W. H., and Pearce, Louise: Latent Infections with the Demonstration of Spirochaeta Pallida in Lymphoid Tissues of the Rabbit, Am. J. Syph. **5**: 1 (Jan.) 1921.

7. Pearce, Louise, and Brown, W. H.: A Study of the Relation of Treponema Pallidum to Lymphoid Tissues in Experimental Syphilis, J. Exper. M. **35**: 39 (Jan.) 1922.

Series I: Using Repeated Doses of 10 Mg. per Kilogram.—Five animals were given from four to eight doses of 10 mg. per kilogram, the drug being given every other day. In four, there was prompt resolution of lesions; the fifth, in which the local lesions had resolved, but which was known to be syphilitic, was treated during the latent period. These animals were held an average of thirty-five days after the last dose. At the beginning of these experiments, the value of lymph node transfer had not been demonstrated, but transfers of the popliteal nodes of two of this series failed to produce lesions in the transfer animals during eighty days of observation.

Series II: Using Repeated Doses of 5 Mg. per Kilogram.—Five animals were given an average of ten daily doses of 5 mg. per kilogram. Resolution began promptly and was complete in an average of eight days. At an interval of thirteen days after the last dose in four animals, and twenty-five days in the other, popliteal node transfers were made. One of the transfer animals failed to develop lesions during fifty-seven days' observation, the others remaining negative during seventy-seven days.

Series III: Using Repeated Doses of 3 Mg. per Kilogram.—Five rabbits were given twelve daily doses of 3 mg. per kilogram. The results of this treatment varied strikingly. In one animal, lesions resolved, and node transfer made forty-nine days after the last dose was negative during fifty-three days of observation. In a second, there was resolution of lesions, but node transfer made the fifteenth day after the last dose was positive in thirty-five days. In the third rabbit, the lesions persisted, and though spirochetes could not be found on the thirtieth day after the last dose, a node transfer was then made which proved positive in thirty-four days. In the other animals, lesions were not resolved, spirochetes being found in one the sixty-fifth day after the last dose. The remaining animal died by accident during the night, and although spirochetes could not be found at necropsy in the morning, the large lesions indicated the slight effect of the drug.

Series IV: Using a Single Dose of 30 Mg. per Kilogram.—Four rabbits were given this dose. In all, there was prompt resolution of lesions. Popliteal node transfers made twenty days after treatment were negative in three animals during ninety days of observation, and positive in one in forty-eight days.

Series V: Using a Single Dose of 20 Mg. per Kilogram.—Four rabbits were used in this series. In all, there was resolution of lesions. Node transfers from two animals made thirty days after treatment showed negative results during 101 days of observation in one, and positive results in the other in forty-three days. A third animal relapsed forty-five days after treatment, and spirochetes were found by dark-field examination. The fourth is still under observation.

Summary.—From four to eight doses of 10 mg. per kilogram, given on alternate days to a series of five rabbits with well established infection, caused resolution of lesions in every case, and in two instances in which node transfer was made no infection resulted in the transfer animals. An average of ten daily doses of 5 mg. per kilogram to a series of five rabbits caused resolution of lesions in every case, and popliteal node transfers were consistently negative. Twelve daily doses of 3 mg. per kilogram to a series of five rabbits gave conflicting results. In two animals, lesions resolved, and node transfer was negative in one, but positive in the other. In the remaining three, lesions persisted. A single dose of 30 mg. per kilogram caused resolution of lesions in four rabbits, negative node transfers in three cases and a positive node transfer in the remaining animal. One dose of 20 mg. per kilogram caused resolution of lesions in four animals, and later observation resulted in negative node transfer once, positive node transfer once, and relapse once; and one rabbit is still under observation.

In a single dose, therefore, the curative dose of flumerin, 30 mg. per kilogram, closely approaches the maximum tolerated dose; but a series of doses of 5 mg. per kilogram is uniformly effective. This is in sharp contrast to serial doses of 3 mg. per kilogram, which are usually ineffective.

CLINICAL APPLICATION OF FLUMERIN

The foregoing is a satisfactory demonstration that this drug is one of very low toxicity, and that in rabbit syphilis it has a definite curative effect. In single dose, its therapeutic ratio is, in common with that of other mercurials, 1 : 1; but repeated small doses are effective in eradicating rabbit infections, the standard of cure being based on rigid criteria. These data were considered sufficient to justify its use in human syphilis. Accordingly, a number of patients have been treated in the syphilis department of the medical clinic, under the direction of one of us (J. E. M.).

We have used flumerin alone in order that the results may not be obscured by the administration of arsphenamin.[8] Treatment has generally been continued at two-day intervals, until a course of from twelve to sixteen doses has been given. In most instances, patients presenting open lesions have been chosen so that the effect of the drug on the healing of lesions could be followed.

In spite of the low toxicity of flumerin in animals, it was considered advisable to begin in the human subject with doses smaller than the demonstrated curative dose in rabbits, in order to avoid possible untoward effects. For this reason, the first dose was usually 2 mg. per kilogram, and subsequent doses 3 mg. per kilogram. For a man, this is about 0.2 gm. Recently, we have administered as much as 5 mg. per kilogram, or about 0.35 gm., to a small number of robust patients, without demonstrable ill effects. These patients are still under treatment, however, and are not included in the present discussion of therapeutic effect or reactions. The results of this larger dosage will be reported in a separate clinical paper.

Ninety-six patients have been treated. Of these, five patients with primary syphilis, twenty-one with secondary syphilis, and twenty-four with various lesions of tertiary syphilis, received five or more injections of the drug, sufficient to permit the formation of an opinion as to therapeutic and possible toxic results. In addition are included ten patients who were intolerant to arsphenamin, five who reacted badly to other methods of administration of mercury, four Wassermann-fast patients, and a few patients with latent or neurosyphilis. The remainder received only a few injections, and were then lost from observation.

The results on the whole have been good. In Table 1 are shown, in summary form, the data regarding the groups with open lesions.

Of the primary cases, three gave seronegative reactions on admission, the duration of the disease being three days, ten days, and seven weeks, respectively. (The last patient had received two doses of arsphenamin, beginning at the fifteenth day of his disease. He developed a typical arsphenamin dermatitis after the second dose, and was transferred to flumerin for this reason. At the time of transfer, his lesions were still unhealed.) In all three of these cases, the blood Was-

8. Since the toxicity of at least one of the halogen mercury compounds of fluorescein is much greater than that of flumerin, it is considered inadvisable at present to administer iodids concurrently because of the theoretical possibility of the formation of a toxic halogen mercurial compound in the body. A separate set of toxicity experiments, using an iodid and flumerin together, should be made.

sermann reaction remained permanently negative during and after treatment with flumerin. One patient had a seropositive reaction on admission which became permanently seronegative after the twelfth dose of flumerin fifty-three days after starting treatment, though a break in the Wassermann reaction was obtained eight days earlier. The length of time necessary to bring about this result is probably due to a long lapse in treatment, twenty-three days intervening between the first and second doses.

With one exception, the primary lesions were healed in an average of twenty-two days, the shortest time being fourteen days (after five doses of the drug), the longest thirty days (after four doses). The one case in which healing failed to occur was that of a man with a typical diphtheritic chancre of three days' duration, in which spirochetes were demonstrated. His blood Wassermann reaction was negative. After seven doses of 3 mg. per kilogram, the initial lesion was still unhealed and had definitely spread. At this time, sixteen days after starting treatment, no spirochetes could be found. A week later, two more doses of flumerin having been given without healing, this drug was discontinued, and a course of eight doses of arsphenamin substituted. The lesion healed very slowly, complete cicatrization occurring only after the sixth

TABLE 1.—SUMMARY OF TREATMENT OF FIFTY CASES WITH FLUMERIN

Stage of Syphilis	Number of Cases	Lesions Healed	Average Number of Days to Heal Lesions	Serologic Result (Blood)		Average Number of Doses to Reduce Wassermann
				Good	Poor	
Primary.....	5	4	22	4	1	3 remained 0 1 case, 12 doses
Secondary...	21	21 (relapse in 1 case)	19	11	10	8
Tertiary.....	24	19 (improved in 5 cases)	25	9	15	10

arsphenamin injection. At the completion of this series, he was put on mercury by inunction; but after three weeks of faithful application to this treatment, he returned with an ulceration in the indurated scar of the healed chancre. Many spirochetes were now demonstrated by dark-field examination. This case, therefore, is obviously resistant to arsphenamin, as well as to mercury, and can hardly be charged against flumerin as a failure.

In secondary syphilis, evidence of the therapeutic activity of the drug was also obtained. Of twenty-one cases, the blood Wassermann reaction was reduced to negative (in most instances permanently so) in eleven. This result was accomplished in an average number of eight doses (about three weeks of treatment). In another case, a break to suggestive negative was obtained after seventeen doses of flumerin. An additional patient, who had received numerous doses of antimony and potassium tartrate intravenously elsewhere because of the erroneous diagnosis of granuloma inguinale, had a negative reaction on admission, which remained so in spite of unmistakable lesions of early secondary syphilis. In the remaining eight patients, the blood Wassermann reaction remained positive throughout the course of treatment. Four of these, however, received only six injections or less.

All lesions were healed, the average time necessary (regardless of the type of lesions) being twenty-one days (seven doses of flumerin). In one patient, a man with enormous condylomas, the behavior of spirochetes was studied. Five hours after the injection of 3 mg. per kilogram, no spirochetes could be found, though on admission they averaged one to the high power field. Twenty-two hours after the injection three spirochetes only could be found after exhaustive search, while, after twenty-five hours, none were present.

One case was of particular interest. This was that of a colored girl with annulopapular lesions on the face, and moist papules about the genitalia. She was given sixteen doses of flumerin, the average dose being 3 mg. per kilogram, at fairly regular intervals, though treatment was twice interrupted because of stomatitis, for a week and ten days, respectively. Her original lesions were completely healed in thirty-one days, after eight doses of the drug, and at the same time a beginning reversal of her blood Wassermann reaction had occurred. The remainder of her treatment was uneventful until the day of the sixteenth injection, when she drew attention to a lesion on her lower lip, of two days' duration. This was a typical papulo-erosive mucous patch about 2 cm. in diameter, containing an enormous number of actively motile spirochetes. Her blood Wassermann reaction was still negative. This represents a clinical recurrence while under treatment, such as are practically never observed under arsphenamin therapy, though similar instances after administration of various types of mercurials are not uncommon.

To sum up with regard to primary and secondary syphilis: evidence is provided that in the dosage employed, 3 mg. per kilogram, flumerin is therapeutically active in the sense that it will cause spirochetes to disappear from lesions, will bring about the resolution of lesions, and, in about half the cases treated, will change a positive blood Wassermann to negative.

Twenty-four cases of tertiary syphilis, mostly gummatous or nodular skin lesions, have been treated. Several cases of bone syphilis are included in this total. All lesions were healed in nineteen cases, and in the remaining five were greatly improved. The average time of healing was twenty-five days. Nodular syphilids healed more promptly, the average being fifteen days; while skin gummas, ranging in diameter from 1 to 10 or 15 cm., took an average of thirty days to heal. A break in the blood Wassermann reaction, not always to a complete negative, was obtained in nine of the twenty-five cases, while in sixteen the test remained positive.

The groups of patients who tolerated arsphenamin or other forms of mercury badly are of interest, and the cases may be briefly summed up. Ten patients who had had an arsphenamin dermatitis have been treated with flumerin and have in every instance tolerated the drug well. The results are obscured by the previous treatment, but in two cases it has been possible to reduce a positive Wassermann reaction to negative. It is suggested that in patients of this type flumerin may prove a valuable addition to our insufficient armamentarium.

Five patients who tolerated badly mercury in other forms have been treated. Three of these, all patients with late syphilis, had repeatedly shown their inability to tolerate mercury by inunction. In each instance, after a week or two of rubs, salivation, headache or severe bone pains always occurred. Each of these persons tolerated from eight to twelve doses of flumerin, 3 mg. per kilogram, without reaction of any kind. The remaining two suffered from recurring eye lesions each time mercury by inunction was attempted, though ars-

phenamin promptly controlled the lesions. In the first, a case of recurrent iritis and neuroretinitis, flumerin was begun after the third course of arsphenamin, in the attempt to avoid the recurrences of the first and second course of inunctions. The result was satisfactory—no recurrence developed. The second patient was put on flumerin during his fifth recurrence of iritis, which healed promptly—a result never obtained in that patient by inunctions.

Reactions.—There were no local reactions observed from the use of this drug. It is nonirritating to veins, and thrombosis has never occurred, even after many injections. In a few instances in which the drug has been injected outside the vein, a moderately painful swelling, lasting about twenty-four hours, has resulted. No sloughs have been observed.

TABLE 2.—GASTRO-INTESTINAL REACTIONS FROM FLUMERIN

Total Number of Doses Given	Number of Injections Followed by				
	Immediate Nausea or Vomiting			Diarrhea	
	Mild	Severe	Cramps	Mild	Bloody
945	22 (2.3%)	19 (2.01%)	7 (0.7%)	10 (1.0%)	8 (0.9%)
	41 (4.3%)				

The general reactions observed may be separated into three groups: (1) gastro-intestinal; (2) stomatitis, and (3) renal irritation. In Table 2, it is shown that, of 945 doses of the drug, 66 injections (6.9 per cent.) have been followed by a reaction of the first group. For the most part they have been negligible, but occasionally a very severe reaction is observed. Fairly commonly, a patient complains of nausea, either actually during the injection of the drug or within five minutes afterward. This is usually mild in character and lasts only a few moments. Less frequently it is quite marked and is associated with very severe retching and vomiting. Even in these cases, however, the discomfort disappears spontaneously within half an hour, and usually there is no after-result. In a few patients, such reactions have tended to recur after succeeding injections, and twice it has been necessary to discontinue the drug for this reason. The rapidity with which the reaction appears suggests that it may be central in origin. Four per cent. of all injections have been followed by reactions of this type, equally divided between mild and severe. Dosage, the number of injections given, the concentration of the solution, or the speed of administration, seems to play no rôle in the development of these reactions.

Seven injections were followed in a few hours by abdominal discomfort or cramps, and eighteen (1.9 per cent.) by diarrhea, which in eight instances, according to the patient's report, contained blood. Two patients had to be transferred to arsphenamin because of bloody diarrhea.

Of the total number of ninety-six patients treated, more than one third complained, at some time during the course of treatment, of sore mouth, gums or teeth. In the majority of cases, this was subjective only. Nothing could be seen on examination, and the continued administration of more drug did not make the condition worse. On the contrary, it usually cleared up spontaneously, even when further injections were given. In six cases, an actual stomatitis, with swollen, bleeding gums, ulceration behind the last lower molar, etc., occurred. In all instances, this was comparatively mild, and cleared up as soon as the drug was stopped.

Aside from this, and the gastro-intestinal reactions already detailed, the use of flumerin has been attended by practically no subjective complaint. These reactions are less frequent than after the arsphenamins or an equivalent amount of other mercurials.

Particular attention has been paid to the possibility of renal damage. Urine examinations have usually been made at every visit, phenolsulphonephthalein tests have been made before and after treatment, and, in a few cases, the blood chemistry has been studied. Of seventy-seven patients in whom adequate urine examinations had been made, the urine showed no change in fifty. In ten instances (12 per cent.), albuminuria or cylindruria present on admission was cleared up by the end of treatment with flumerin. In seventeen cases (22 per cent.), a transient albuminuria or cylindruria developed during treatment, but cleared up promptly on cessation of the drug. In four instances, both albumin and casts appeared, in nine cases albumin only, and in four casts only. These figures are based on a dosage of 3 mg. per kilogram. Recent experience, using 4 or 5 mg. per kilogram, shows no higher incidence of urinary abnormalities, though the data regarding these dosages are not included in this paper. Judging from the urine examinations, therefore, no permanent renal damage was done by flumerin.

Confirmation of this is afforded by the phenolsulphonephthalein results. In thirty-six of sixty-one patients, the last test was the same as the first. In nine instances (14.7 per cent.), the phenolsulphonephthalein output was fifteen or more points higher at the end than at the beginning of treatment, while in three cases (4.9 per cent.) only was there a drop of fifteen or more points (— 25 once [artefact?], — 15 twice). Blood chemistry studies before and after treatment have also been negative. Not only is evidence of nephritis lacking, but it is also apparent that the functional renal abnormalities caused by syphilis have frequently disappeared after the administration of flumerin.

TABLE 3.—REACTIONS FROM FLUMERIN

Total Number of Patients	Stomatitis		
	Total Cases	Mild	Severe
96	36 (37.5%)	30	6 (6.2%)
	Urine Examinations		
	No Change	Existing Abnormalities Cleared up Under 205	Transient Albuminuria or Casts During Treatment
77	50	10 (12.9%)	17 (22%)
	Phenolsulphonephthalein Output		
	No Change	Increased Plus 15 or More	Decreased Minus 15 or More
61	49	9 (14.7%)	3 (4.9%)

This drug is, therefore, singularly free from serious reactions in the dosage which we have employed.

COMMENT

The evaluation of the worth of any new drug in medicine, and particularly in the treatment of syphilis, is a difficult problem, which must be approached with the utmost caution. In this instance, it is fraught with special difficulties. It is obvious that flumerin cannot be compared with the arsphenamins. No strictly comparable studies with other mercurials, especially so far as rabbit syphilis is concerned, have been carried out. It is not permissible to conclude, because the single dose

therapeutic ratio of this drug is the same as that of other mercurials, and because a quantity of flumerin from eight to twenty times greater than other mercurials can be safely employed, that the actual therapeutic activity of flumerin is, therefore, proportionally greater. Therapeutic activity depends on many other factors, chief among which may be mentioned the penetrability of a given drug, and its ultimate fate in the body. No comparisons are therefore attempted, and it is given only as our clinical impression that flumerin is, from the standpoints of toxicity and therapeutic activity, superior to the soluble mercurial salts in general use by the intravenous route.

No attempts have as yet been made to employ the drug by the intramuscular route. For the present, and until adequate experimentation shall have demonstrated the limitations of toxicity, the factor of freedom from pain and the relative value of this route as compared to the intravenous route, we do not advise its use.

From the standpoint of the clinical results, it should be pointed out that, as yet, we have given only small doses of the drug. The results obtained in rabbit syphilis indicate the desirability of employing doses larger than 3 mg. per kilogram. The few instances in which we have recently administered 4 or 5 mg. per kilogram indicate that the effect of the drug on lesions and on the Wassermann reaction is enhanced. Attempts to increase the dosage must, however, be carried out cautiously and under adequate control.

No attempt is made to suggest the ultimate place which this drug may attain in the treatment of syphilis. It is not available for general distribution, and, for the present at least, permission will not be granted for its commercial manufacture.

SUMMARY

This paper deals with a new soluble mercurial drug of low toxicity and of remarkably nonirritating character when injected intravenously. The complete chemical name—hydroxymercurifluorescein—has been shortened to flumerin. This drug is effective in eradicating experimental syphilis in rabbits in doses which are well tolerated. Even in large doses, it causes little or no clinical injury to the kidneys of animals. In ninety-six human cases, definite proof of its value as an antisyphilitic drug has been given.

Doses containing from eight to twenty times the amount of mercury present in the therapeutic dose of other mercurial drugs commonly used intravenously have been given with impunity, and the maximum dose which may be employed serially in the human being has not yet been determined.

The therapeutic effect of the drug has been shown in primary, secondary and tertiary syphilis by the resolution of lesions and the reversal of positive blood Wassermann reactions. The number of cases treated is sufficient to demonstrate that this mercurial is of value, but is too small to permit the allocation of the drug to a definite place in the therapy of syphilis.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. KEIM AND WILE, KEIDEL, AND WHITE, HILL, MOORE AND YOUNG

DR. UDO J. WILE, Ann Arbor, Mich.: I can add very little to what Dr. Keim has said about this test, except to emphasize that it embodies certain features that are simplifications of our standard Wassermann reaction. It commends itself by the fact that all those tests which would ordinarily be 4 plus with the standard Wassermann reaction can be read within one hour after the blood has been drawn. Secondly, the use of a single substance in the performance of the test, together with a small quantity of blood serum, leads certainly to the hope that we are on the way toward a possible standardization of this test. Surely, if a test is so simple that it requires only a single substance plus the suspected blood serum and the complete elimination of the many details and sources of error which are found in the employment and nomenclature of the hemolytic system, that test is deserving of careful scrutiny for general application. It must be remembered that we have used this test in only a small number of cases. Three hundred cases tested clinically is really a very small number on which to base conclusions. This test has been used about 8,000 times, not clinically but in the department of health in Lansing, where its author, Dr. Kahn, compared it from the serologic standpoint with the Wassermann reaction, and I believe that it is on the way to a permanent place in the serology of syphilis.

DR. R. L. KAHN, Lansing, Mich.: The limited time at Dr. Keim's disposal necessarily did not give him an opportunity to discuss the principle of the reaction. I will therefore take the liberty to say a word about it. Briefly, the antigen is so prepared that it contains a concentrated amount of antigenic substance and is diluted with physiologic sodium chlorid solution for the tests, with a view to rendering the final mixture as unstable as possible. This instability is brought about by adding as little salt solution to the alcoholic antigen as possible, rendering the diluted mixture on the verge of precipitation. This mixture is opalescent and clear, and will remain so at warm room temperature; but placed in the icebox, it will precipitate. The antigen is thus quite sensitive to precipitation. Therefore, when properly mixed with syphilitic serum, the antigen molecules readily react with the combining molecules of the serum, and marked precipitation results. Dr. Wile said that in the state health department at Lansing, about 8,000 tests had been made. This, I think, is based on a statement made months ago. We have now a record of more than 12,500 precipitation tests in the state laboratory. Most of these tests, however, lack definite clinical histories. The combined laboratory and clinical study of Dr. Keim and Dr. Wile, therefore, is of the utmost importance. For my part, it can only serve as a stimulus to try to perfect the test as much as possible, with a view to rendering it an important aid in the diagnosis of syphilis. With regard to spinal fluids, we are still in the experimental stage. We hope, in the course of months, to have this test apply to spinal fluids as well. The paper presented by Dr. Keim and Dr. Wile is based on the third communication of this precipitation test, which is to be published.

DR. JAMES HERBERT MITCHELL, Chicago: I should like to emphasize the importance of gland puncture in the early diagnosis of syphilis. Until about a year ago I thought very little of this, not having carried it out in any series of cases. Recently, however, I have carried this out as a routine procedure in all early cases of syphilis. Many times the chancre has been treated locally with various antiseptics, and often we do not see the chancre in public practice until three or four weeks have elapsed. At that time, especially after the application of antiseptics, it is very difficult to find spirochetes in the serum from the surface. Formerly we used to puncture the chancre at the root, but now we are puncturing the lymph glands. At first I used a small needle, believing that I obtained a better serum in that way; but now I use a large needle and leave it in the gland for two or three, or sometimes five, minutes, moving it about quite a little. Then with a very tight fitting syringe we aspirate gently. In practically all cases in which the glands in the region are large it is possible to get the organism.

DR. RICHARD L. SUTTON, Kansas City, Mo.: Dr. Driver referred to the importance of repeated Wassermann tests in cases that are negative to examination by dark field illumination. At times, it is extremely difficult to diagnose a suspicious primary lesion, and in many instances, only time and a number of serum tests will solve the problem. Should material from the lesion itself fail to contain spirochetes,

serum, obtained by puncturing a contiguous lymph node, may prove fruitful. I believe that much of the criticism of the Wassermann test is due to the fact that in about 50 per cent. of cases the test is improperly or carelessly made. If it is too sensitive, we not infrequently get a false positive in a patient who is innocent of syphilis; if lacking in sensitiveness, a weak positive will be reported as negative. In one of our Kansas City laboratories, Dr. W. W. Duke and his laboratory chief, Miss Elizabeth Lease, have formulated a standard Wassermann test, or rather series of tests, in which I have grown to have great confidence. I cannot too strongly emphasize Dr. Keidel's plea for early and repeated examinations of the spinal fluid in patients with tertiary syphilis and neurosyphilis. It is a serious mistake to release a patient as "cured" until a careful examination of the spinal fluid has been made. I was also interested in Dr. Keidel's statement regarding the absence of gross skin manifestations in many, if not the majority of cases of syphilis of the nervous system. Dr. Charles White has called attention to the great frequency with which persons suffering from tabes and paresis give a negative history of skin syphilis, and I must acknowledge that I belong to that rather old fashioned school, the pupils of which believe that there exist certain strains of spirochetes which possess an affinity for certain tissues, such as the skin and the spinal cord. Dr. Moore and his associates have done an interesting and, I believe, valuable piece of work, and the remedy which they have introduced should find a broad field in the treatment of those patients who are very susceptible to arsenic.

DR. JOHN E. LANE, New Haven, Conn.: I was particularly interested in the relatively high percentage of ulcerative and gangrenous balanoposthitis found in Dr. Driver's series of penile lesions. Attention has not been called to this disease sufficiently, although Donovan's paper on the subject a year or two ago attracted considerable attention. The extremely rapid destruction of tissue which takes place when this condition is not recognized early makes its early diagnosis of the utmost importance, whether it exists alone or in combination with a chancre. I have found that this condition does not respond as well to intravenous injections of arsphenamin as does the Vincent infection in the mouth. I should like to know whether others have had the same experience. I was much interested in Dr. Moore's paper, but was rather disappointed that he did not compare the toxicity, therapeutic results and accidents following the use of the new compound, with those of the best mercurial compound we have previously used intravenously, mercuric cyanid. It would seem that a comparison of this sort should be made and that a probable superiority of the new compound should appear from the comparison in order to make a convincing argument for the adoption of the new compound. I should like to hear Dr. Moore's impression of this, even though he may have no experimental data on the cyanid. From the minor accidents following the injection of the new mercurial as described by Dr. Moore, I should infer that they are more frequent and somewhat more troublesome than they are following the use of mercuric cyanid.

DR. HARRY G. IRVINE, Minneapolis: The figures of Dr. Driver on the difficulty of making an early diagnosis in syphilis are not only very interesting but also of extreme importance. I was much interested in the failure with results after something had been used on the chancre in the way of antiseptics. I should like to call attention to the work of Kolmer on the Wassermann test of serum from the chancre. For the past year we have been doing some work along this line, and have confirmed his work with forty or fifty cases. These have been proved later, either by clinical symptoms or finding of spirochetes, and so far as we have gone we have been able to show the presence of a positive Wassermann reaction in the serum from the initial lesion. I think this is important, and it may be that before long physicians will be able to send in serum from the lesion as they now send the blood for a test, and we may then make the diagnosis much earlier.

DR. WILLIAM ALLEN PUSEY, Chicago: One of the points Dr. Keidel made should not pass without more comment than it has had, and that is the importance of the early immunity produced when syphilis is allowed to run its course. It is interesting to find that this work is confirming the early view that the uncured early treated case of syphilis was in worse shape than the patient who had been allowed to go on and develop his immunity. The experiments of Moore and Pearce are along the same line as the experiments reported today, and we should not let pass the importance of the observation that was made.

DR. JOSEPH GRINDON, St. Louis: In reference to the intravenous use of mercury in syphilis, I wish to call attention to the fact that in the medical history exhibit at the library of the St. Louis Medical Society, among many other interesting things, there is a copy of the Acta Philosophica of the British Royal Society, published in 1674, giving an account of the treatment of syphilis by the intravenous injection of a mercurial solution, done in 1668. Also an English translation of the Latin original by Dr. L. C. Boisliniere of this city.

DR. V. G. VECKI, San Francisco: I am really glad to see that the glands are being a little more appreciated as a pathognomonic symptom, for even in late syphilis the glands sometimes will tell us stories that the blood test cannot. Ravogli recently named the two different strains of spirochetes, the neurotrope and the dermatrope. I had the opportunity to see the Molzer experiments in Munich. One strain he called his own, and another he got from Italy. With Plaut's system to obtain the spinal fluid of the rabbit without any admixture of blood, it was proved in many experiments that the Italian strain caused an increased cell count in the spinal fluid before any other symptom of syphilis appeared, or even any symptom to show that the inoculation was successful. That would prove that there are neurotrope strains; but if the German strain and the Italian strain show such a difference, how shall we explain the difference here in America? There are many questions to answer and one really does not know where to begin or where to stop. Of course, I also had my troubles with the Wassermann reaction, and I only hope that the Vernes colorimetric test, which is being investigated at the Columbia Hospital and which I have closely studied, and which, though fought for many years by the French medical profession, is now being endorsed by the president of the Pasteur Institute, Professor Brock and many other syphilographers, is going to solve the problem and enable us to make a periodic quantitative diagnosis and always receive the proper answer: Is there any syphilis or not?

DR. JAMES R. DRIVER, Cleveland: I am glad to hear Dr. Mitchell speak of gland puncture in making dark-field preparations. This procedure, especially in cases having had previous local treatment, should increase greatly our percentage of positive results. Our results so far by this method have not been very flattering, but with Dr. Mitchell's suggestions in mind we will try to improve our technic. Dr. Lain spoke of Vincent infections in the mouth reacting better to treatment than those on the genitalia. This has been our experience, if the infection involves the deeper tissues. What I wish to emphasize about erosive gangrenous balanitis is the early diagnosis, before the deeper structures are involved. In one of our cases there was almost complete destruction of the penis in one week's time, and in another there was total destruction of the scrotum in less than a week. We put these cases on soaks of hot potassium permanganate, 1:5,000 solution, for thirty minutes every four hours, alternating with hydrogen peroxid as a wash. The process clears up in a few days, but in the cases with extensive destruction a much longer time is necessary. Dr. Irvine's suggestion of early Wassermann tests on the serum from genital lesions is quite timely. This, in addition to our dark-field examination from the lesions, and from serum obtained by puncture of the regional lymph glands, I think, should make it possible to diagnose almost 100 per cent. of our primary lesions before the Wassermann reaction on the blood becomes positive. This would mean the possibility of curing practically all of our primary syphilitics if adequate therapy is given.

DR. H. L. KEIM, Ann Arbor, Mich.: We suggested that the tests should be read on the following morning without

shaking. However, I noticed that immediately when the tubes were received in the audience, they were shaken; while this does not dissolve the precipitate, it does break it up and make it less perceptible to the naked eye. We are planning further studies with this test, and hope at a later date to add more data on its clinical application.

DR. ALBERT KEIDEL, Baltimore: Whether or not we shall have to change our conceptions of immunity will be told by the future, but it seems today that our original ideas about immunity in parasitic diseases are about to undergo some rather fundamental changes, particularly getting away from the idea of the more or less graphic conception which we carry in our minds of Ehrlich's side-chain theory. We are approaching the chemical solution rather than the biologic solution of these theories. The question of strains has a bearing on the problem I presented, but as it is such a controverted point I wish only to say that my attitude toward the existence of strains, the neurologic strain, for example, is not one of great enthusiasm. I think the arguments against the existence of strains are very much more sound and practical than those in favor of them.

DR. J. E. MOORE, Baltimore: In reply to Dr. Lane, I did not attempt to make any very definite comparison with cyanid or other mercurials used intravenously. Cyanid contains by weight about 83 per cent. of mercury as against 32 per cent. for the new drug. The maximum therapeutic dose of cyanid is about 0.02 gm., whereas the therapeutic dose of flumerin is from 0.2 to 0.3 gm. On the basis of mercurial content, that means about seven times as much mercury in flumerin as in cyanid. The therapeutic ratio of both drugs is 1:1. The single curative dose in animals is practically the maximum tolerated dose. In order to cure the disease one has to kill the animal. No experiments have been carried out with node transfer for other mercurials, so far as I know, so that we feel we have a better criterion of cure for flumerin than for other preparations. I am not familiar with any recent literature on the use of cyanid alone. I am familiar with much literature in which cyanid has been used in connection with other drugs, and I feel that such work is absolutely of no value in estimating the worth of cyanid. This drug has been supplied to four or five clinics, notably those of Dr. Fordyce, Dr. Schamberg, Dr. Stokes and Dr. Wile, who I hoped would say something about it. Dr. Schamberg has been particularly interested because of the work he and Dr. Kolmer had done on the mercurials.

CALCIUM AND PHOSPHORUS METABOLISM IN PATIENTS WITH FRACTURES *

FREDERICK F. TISDALL, M.D. (TOR.)
Attending Physician, Pediatric Service, Hospital for Sick Children
AND
ROBERT I. HARRIS, M.B. (TOR.)
Attending Surgeon, Hospital for Sick Children
TORONTO

The exact mechanism by means of which calcium salts are deposited in areas of bone growth or bone repair is to a large extent unknown. While part, at least, of the process must take place at the site of growth or fracture, there is reason to believe that changes in the inorganic metabolism of the body may accompany and perhaps determine the deposition of bone salts. During the last three or four years, many investigations have been undertaken in the study of one of the frequently encountered diseases of childhood which produces marked changes in the osseous system; namely, rickets. These investigations included not only the experimental production of rickets in animals, but also the study of the inorganic metabolism in children with this disease. Howland and Kramer [1] have shown that in rachitic infants the inorganic phosphate content of the blood serum is markedly reduced, and that when healing occurs, with the deposition of bone salts, the phosphate content of the serum again reaches a normal level. These authors have advanced a theory to explain the deposition of bone salts, and have given considerable evidence in support of it. Briefly, the theory is that the serum (and tissue fluids) of normal infants contains calcium and phosphate in a nearly saturated solution; slight reduction of the acidity of the tissue fluid at a point at which the cartilage is in close contact with the circulation from the bone marrow reduces the solubility of these salts, and results in their precipitation. As a result of the foregoing work, and also of the study of the calcium and phosphate concentration in the serum of rachitic infants undertaken by one of us, we have endeavored to determine whether some of the fundamental principles which apparently apply to the deposition of bone in rickets also apply to the deposition of calcium salts in the union of fractures.

TABLE 1.—CONCENTRATION OF PHOSPHORUS IN SERUM OF PATIENTS OF VARIOUS AGES FROM A FEW MONTHS TO FORTY-FOUR YEARS

Serum No.	Age, Years	Inorganic Phosphorus per 100 C.c. of Serum, Mg.	Serum No.	Age, Years	Inorganic Phosphorus per 100 C.c. of Serum, Mg.
53	4 mos.	5.7	29	21	4.1
22	10 mos.	5.3	43	21	3.9
10	1 yr.	5.2	33	23	3.5
20	1 yr. 2 mos.	5.8	53	23	3.7
55	3	6.4	40	24	4.0
61	5	5.7	50	24	3.7
58	7	4.8	45	25	3.8
60	9	6.0	46	25	3.7
59	10	5.2	51	25	3.8
62	11	5.7	47	26	4.3
68	12	5.5	36	27	3.6
64	13	5.4	35	28	3.7
397	14	4.4	49	28	3.6
411	15	4.4	44	29	3.7
395	16	6.0	48	30	4.0
412	17	5.1	31	31	4.0
396	19	5.2	30	32	3.7
413	19	4.5	32	33	3.7
25	19	4.2	34	33	3.7
28	20	4.1	41	34	3.2
39	20	3.7	42	44	3.9

While we by no means have solved the problem of deposition of bone in fractures, we have found that certain definite and important changes in the inorganic metabolism of the body almost invariably accompany the process of bone repair.

The inorganic constituents of bone consist largely of calcium phosphate, with a small amount of calcium carbonate and a trace of magnesium phosphate. These elements must be carried to the site of growth by the tissue fluids, which in turn receive their calcium, phosphorus and magnesium from the blood serum. As it is not feasible to examine tissue fluids, our studies have consisted in the determination of the calcium and phosphorus in the serum of normal persons and of patients with fractures. The methods used have been described elsewhere.[2] After making several hundred determinations of both calcium and phosphorus by these methods, we are convinced that the results recorded here are accurate within 2 or 3 per cent.

* From the Nutritional Research Laboratory of the Hospital for Sick Children and the Departments of Pediatrics and Surgery, University of Toronto Faculty of Medicine.

1. Howland, J., and Kramer, B.: Calcium and Phosphorus in Serum in Relation to Rickets, Am. J. Dis. Child. **22**: 105 (Aug.) 1921.
2. Kramer, B., and Tisdall, F. F.: J. Biol. Chem. **47**: 475 (Aug.) 1921. Tisdall, F. F.: Ibid. **50**: 329 (Feb.) 1922.

As a basis for further work, an examination of the phosphate content of the serum of normal persons was undertaken. Howland and Kramer first drew attention to the fact that the phosphate content of the serum of infants is considerably higher than that of adults. In sixteen normal infants, they found an average phosphate content of 5.4 mg. of phosphorus for each hundred cubic centimeters of serum, while an average concentration of 2.1 mg. of phosphorus for each hundred cubic centimeters was found in eight normal adults. In Table 1 of this paper are given the results of our determinations on forty-two normal persons. These are recorded according to the age, which varied from 4 months to 44 years. The results from 4 months to 19 years averaged 5.4 mg. of phosphorus for each hundred cubic centimeters, while the results from 20 to 44 years average only 3.8 mg. of phosphorus for each hundred cubic centimeters.

In Table 2 are given the results of the determination of the calcium and phosphorus in the serum of adults with fractures. The blood was obtained in most instances from two to six weeks after the fracture occurred, and in all cases there was clinical or roentgen-ray evidence of union. The calcium concentration increased only slightly above the normal

TABLE 2.—CONCENTRATION OF CALCIUM AND PHOSPHORUS IN SERUM OF PATIENTS DURING THE PERIOD OF UNION OF FRACTURES

Serum No.	Age, Years	Calcium per 100 C.c. of Serum, Mg.	Inorganic Phosphorus per 100 C.c. of Serum, Mg.
107	33	9.6	5.3
108	20	9.9	5.3
109	32	9.5	5.0
111	79	10.0	5.1
112	50	9.9	5.3
282	20	10.7	5.4
290	53	9.9	5.5
278	35	11.0	5.3
281	21	10.5	5.6
444	47	10.1	5.2
445	57	10.2	5.2

of 10 mg. of calcium for each hundred cubic centimeters, while the phosphorus increased from the average in the adult of 3.8 mg. of phosphorus to 5.3 mg. of phosphorus for each hundred cubic centimeters.

The figures reported in Tables 1 and 2 are of considerable interest. It is to be noted that from 4 months to 19 years of age, the concentration of phosphorus is remarkably constant. At about 19 or 20 years of age, the concentration falls to a much lower level, and from then on the results are again very constant (Chart 1). It is at this age that most of the epiphyses unite, and active bone formation ceases. When active bone formation again occurs as the result of a fracture, the phosphorus is again elevated to the high level present during the period of normal growth of bone. It is thus evident that a high concentration of phosphorus in the blood serum accompanies the deposition of bone salts during the periods of normal growth of bone, and of repair of fractures.

In a number of cases calcium and phosphate determinations were made at weekly intervals. A slight increase in the concentration of the calcium in the serum generally occurred. In Chart 2 the phosphate determinations in a typical case are graphically recorded. There is a rapid elevation of the phosphorus, which remains at a high level until about the seventh week, at which time it begins to fall, and reaches its original concentration at the eighth or ninth week. The time at which the phosphate curve begins to fall coincides with the period at which the deposition of bone salts at the site of fracture ceases.

Since the repair of a fracture is usually accompanied by a high phosphate content in the serum, one might expect to find a low concentration of this ele-

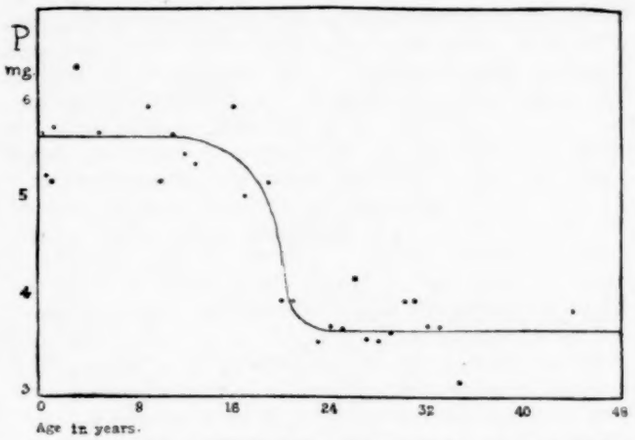

Chart 1.—Curve of the phosphate content of the serum throughout life. This chart is based on forty-two determinations of the phosphate content of the serums of patients whose ages varied from a few months to 45 years. Prior to the age of 20 years the phosphate content is practically always above 5 mg. for each hundred cubic centimeters, while after 20 years of age the estimations nearly all fall below 4 mg. for each hundred cubic centimeters. The drop in the phosphate curve occurs at the age of 20, corresponding to the period of cessation of growth. In all of the charts, the figures at the left indicate milligrams of phosphorus for each hundred cubic centimeters of serum.

ment in cases of nonunion. We have been fortunate enough to have the opportunity of making observations of the calcium and phosphate content of the serum in two cases of nonunion. Determinations were made within a short period of the time of fracture, and then repeated at weekly intervals for fifteen weeks in one case, and eight weeks in the other. The second case will be discussed later. The phosphate determinations from the first case are recorded in Chart 3. In contrast with the cases of normal union, it required five weeks for the phosphorus to reach the concentration of 5 mg. of phosphorus for each hundred cubic centimeters. The calcium concentration, which was at

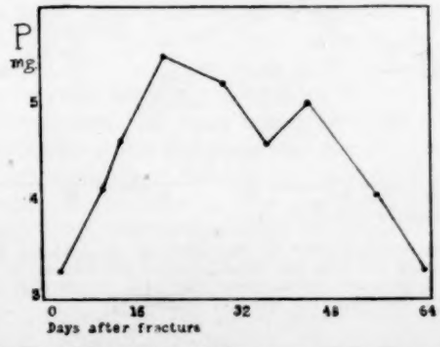

Chart 2.—Phosphate content of the serum of T. T., aged 53, with simple fracture of femur, treated by fixation in a Thomas splint. Union solid at the end of nine weeks. Roentgen ray revealed abundant callus. Patient was walking at the end of twelve weeks.

9.2 mg. of calcium for each hundred cubic centimeters of serum, instead of the normal average of from 9.5 to 10 mg., increased in four weeks' time to the normal level, and continued at this level throughout the remaining determinations.

The changes which occur in the phosphate concentration of the serum during periods of defective

deposition of bone and of active bone formation are recorded graphically in Chart 4. In this chart there has been superimposed upon the diagram representing the concentration of the inorganic phosphorus of the serum throughout the greater part of life the curve of the phosphate changes in an infant with rickets, and an adult during the period of repair of a fracture. In the case of the infant with rickets, the calcium concentration was lowered only slightly. Roentgenograms were taken when the phosphorus was at 3 mg. for each hundred cubic centimeters, and defective deposition of bone was clearly in evidence. No essential change was made in the diet, but the infant was exposed daily for fifteen minutes to the rays from a mercury vapor quartz lamp. After two weeks the phosphorus was elevated to 5.5 mg., and two weeks later to 6.7 mg. of phosphorus for each hundred cubic centimeters. Roentgenograms taken at these periods showed a marked deposition of bone. It is evident from the chart that during the repair of a fracture, the phosphate content of the serum is raised to a level equal to that which it reaches during childhood, i. e., during the period of bone growth. In other words, whenever new bone is being laid down, there is an increased concentration in the serum of certain inorganic salts necessary for the formation of bone.

There is some evidence to warrant the belief that certain drugs are capable of influencing the deposition of bone. In reviewing the literature it was noted that the administration of calcium phosphate was recommended in the treatment of delayed union of fractures. Phemister and his co-workers [3] have shown clinically that the administration of yellow phosphorus to patients suffering from rickets and fragilitas ossium results in the deposition of new bone. Previous work had shown us that 1 ounce (30 c.c.) of cod liver oil administered daily for ten days to normal adults increased the phosphate content of the blood by 15 per cent. These three drugs, alone or in combination, were therefore administered to dogs in which fractures of the humerus had been experimentally produced.

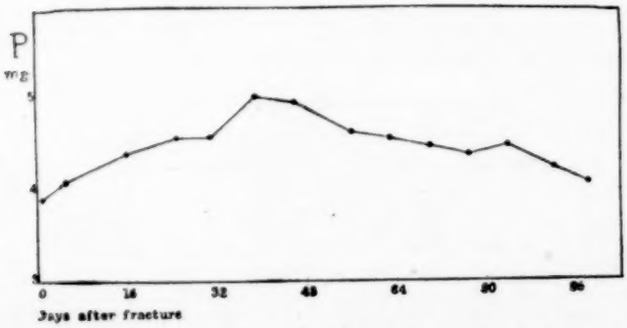

Chart 3.—Phosphate content of the serum of G. S., aged 46, with simple fracture of the tibia and fibula, treated by fixation in plaster. At the end of seventeen weeks there was still complete absence of union, although the fragments were in apposition.

RESULTS OF THE EXPERIMENTS

All the animals showed a rise in the phosphate content of the serum similar to that seen in the clinical cases of fracture cited above. The administration of the various drugs did not appear to modify these curves to any appreciable degree. As in the clinical cases, the calcium curves showed only slight alterations.

3. Phemister, D. B.: The Effect of Phosphorus on Growing, Normal and Diseased Bones, J. A. M. A. **70**: 1737 (June 8) 1918. Phemister, D. B.; Miller, E. M., and Bonar, B. E.: The Effect of Phosphorus in Rickets, J. A. M. A. **76**: 850 (March 26) 1921.

The most interesting observation was that, in spite of the rise in the phosphate curve which our previous work had led us to regard as an index, and perhaps an essential factor in the union of fractures, solid union had not occurred in any of the animals at the end of seven weeks. Fair union had occurred in the control animal to which no drug had been administered. In this animal it happened that the fragments remained in reasonably accurate apposition, and this appears to have been the deciding factor in producing union. In

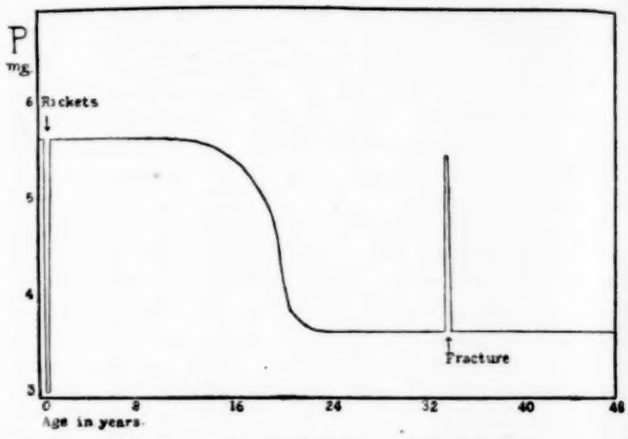

Chart 4.—Normal curve of the phosphate content of the serum throughout life, on which has been plotted on the same scale the curves of two patients suffering from conditions which are accompanied by alterations in the phosphate content of the serum. In infancy is plotted the curve of a patient suffering from severe rickets, who recovered under treatment by quartz mercury light. In adult life is plotted the curve of a patient who sustained a fracture of the femur. These inserted curves illustrate graphically the degree of the changes in phosphate metabolism that may take place as the result, respectively, of impairment of deposition of bone, and renewed deposition of bone.

the remaining animals there was more or less imperfect apposition of the ends of the bone, and in all of these there was nonunion. It was evident from these results that, in addition to the metabolic change we had been studying, there was another and equally important factor of a local nature concerned in the union of fractures.

The repair of fractures presents many unsolved problems. Union of fractures is sometimes difficult to obtain. Apart from nonunion due to mechanical factors, such as loss of substance from the shaft of the bone, or interposition of soft tissue between the ends of the fragments, there exists a group of cases in which union fails, although every factor seems favorable to success. The failure in these cases is due to a lack of deposition of bone salts in the reparative tissue between the ends of the bone. The exact mechanism by which this deposition is normally produced is not known. It would seem that, in the healing of fractures, two mechanisms are at work: one concerned with maintaining an adequate supply of bone salts in the blood, and the other with the taking up of these salts from the blood, and their precipitation in the tissue between the ends of the bone. Of these, the latter is apparently the more important process. The following case appears to be evidence that in spite of an imperfect metabolic reaction, perfect union of the fracture may take place, indicating that the mechanism at the local focus was able to calcify the reparative tissue, in spite of a comparatively low phosphate content in the blood:

M. E. suffered a compound fracture of the tibia and fibula. The phosphate content of his blood serum did not at any time during the period of observation exceed 4.2 mg. of phosphorus for each hundred cubic centimeters. At the end of six weeks,

however, solid union of the fracture had taken place. Discharging sinuses due to a traumatic osteomyelitis remained.

It should be stated in explanation of this unusual failure of metabolic response that the patient was a diabetic, a condition in which the whole acid-base metabolism may be altered. In addition we have some evidence which leads us to believe that patients with discharging sinuses have a low phosphate curve under circumstances which ordinarily would produce a sharp rise. Whatever may be the explanation of the low phosphate curve of this patient, the outstanding fact is that the local mechanism was able to produce normal calcification without a high concentration of phosphate in the serum. On the other hand, the second case of nonunion which came under our observation afforded evidence that a normal rise in the phosphates is not of itself sufficient to insure union:

M. W. suffered a fracture of the tibia. After treatment by fixation for nine weeks, there was no clinical evidence of union, and roentgen-ray examination did not detect any callus. Examination of the blood serum revealed the usual rise in the phosphate content (Chart 5).

This is apparently a case in which every factor in the healing of fractures was normal, except the mechanism whereby bone salts are precipitated at the local

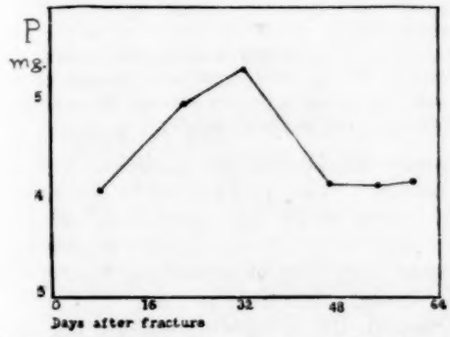

Chart 5.—Phosphate content of the serum of W. W., with simple fracture of the tibia and fibula, treated by fixation in plaster. Eight weeks after fracture there was no evidence of union on either clinical or roentgenographic examination. This appears to be evidence of the importance of the local mechanism as contrasted with the metabolic mechanism in the healing of fractures.

focus. These two cases appear to point to the importance of a local process, the exact mechanism of which is as yet unknown.

It is known that the rate of healing of fractures varies with the age of the patient, and union is more rapid in young than in old persons. We have found that the increase in the blood serum phosphate which occurs after fractures takes place much more rapidly in young than in old persons. An increase which occurs in two to three weeks in adults takes place in patients under 25 years of age in less than one week. Whether the delayed response of the general inorganic metabolism of the body to a fracture accounts for the slower union in elderly patients, or whether it is due also to a delayed response of the local factor, we do not know. Further investigations are being carried out in an endeavor to throw more light on this interesting problem.

CONCLUSIONS

1. The inorganic phosphate content of normal serum from birth to 20 years of age is remarkably constant. At this age it drops sharply to a lower concentration, and is again remarkably constant at this lower level throughout adult life.

2. The drop in the phosphate content of the serum at the age of 20 corresponds to the period of cessation of bone growth.

3. During the period of union of fractures in adults, the phosphate content of the serum is raised to a level approximately the same as that present in childhood, i. e., the period of active bone growth.

4. There is a close parallelism between the concentration of inorganic phosphate in the serum, and the deposition of new bone, both during the period of growth and during the period of repair of fractures.

5. In addition to the increase which occurs in the inorganic phosphate content of the serum during the union of fractures, there is also a local metabolic process at the site of fracture, which is probably even more important for the production of union than the increased phosphate content of the blood serum.

67 College Street.

CHRONIC APPENDICITIS *

JOHN A. LICHTY, M.D.
PITTSBURGH

Much of the confusion which arises from a discussion of chronic appendicitis is due to the fact that it is not always specified whether the point of view is that of the pathologist or that of the clinician. The clinician has in mind a very definite syndrome when he speaks of acute appendicitis: A patient who has previously been well has a sudden severe pain in the abdomen, referred first to the epigastrium, with accompanying nausea, and possibly vomiting; a slight increase of pulse rate, with slight elevation of temperature; a chilly sensation, an appreciable increase of the leukocytes, and sooner or later tenderness over McBurney's point. On immediate opening of the abdomen there is sufficient evidence to warrant the diagnosis of an acute appendicitis. The pathologist, standing by, may at first see nothing more; but on closer examination he will find either macroscopic or microscopic evidence of a former inflammatory process. This may be confined to the mucosa, or may extend to the submucosa, the muscularis or the serosa. To him it is an acute exacerbation of a chronic appendicitis. A more careful review of the history of the case may occasionally lead to a revision of the diagnosis, and the clinical and pathologic diagnoses will agree; but too often this is not the case, either because the patient has forgotten, or the physician has not been sufficiently keen in his analysis of the history, or it may be because the attack was so mild or the symptoms so insidious that they were not recognized by either patient or physician. There is no doubt that the latter is frequently the case, and that many of the so-called cases of acute appendicitis are really acute exacerbations of a chronic appendicitis which may have come on insidiously. Such is the opinion of Aschoff and other reliable authorities.

The problem of the chronically diseased appendix is therefore a large one, for it includes a consideration not only of those appendixes in which there is a clear and definite history of acute exacerbations leading to a chronically diseased appendix, but also of those in

* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

which the symptoms are mild, scarcely recognized or entirely masked (appendicitis larvata—Ewald).

That this problem may be discussed to any advantage, the underlying pathologic condition must be definitely kept in mind. The mucous membrane of the appendix is studded with crypts very much the same as are found in the tonsillar tissue. These crypts may become infected, and an inflammatory process, single or multiple, may arise, such as is seen in acute tonsillitis. When this process is confined to the mucosa, it may be said to be a simple catarrhal process; when it extends to the submucosa it may be said to be diffuse, and if the inflammation proceeds to the pus-producing stage, it is called purulent appendicitis. At either of these stages the tissues may maintain the power of repair, and after a time there may be no other evidence than localized scar tissue of the disease process having been present. The simple catarrhal or the diffuse forms may occur without any appreciable symptoms. It is not improbable that a localized purulent form may occasionally occur without recognized symptoms so long as the lumen of the appendix is not encroached on to interfere with adequate drainage. If, on the other hand, the inflammatory process continues to tissue death, or if drainage is interfered with, gangrene and perforation may ensue. Even at this stage, the tissue defense may be so effective that repair may take place without surgical intervention.

After many repetitions of acute catarrhal or acute diffuse attacks, the appendicitis takes upon itself the form of chronicity. In this condition, however, on account of interstitial scar tissue from ulceration, surrounding adhesions, retained fecaliths or an obliterating process, an acute exacerbation may again occur, which may be as definite in its course as though it had occurred in a previously healthy appendix. The relative frequency of these conditions is shown by Klotz,[1] in an analysis of 5,647 appendixes examined. Of these, 1,718 showed chronic interstitial lesions, 1,689 had adhesions, 832 were obliterated, and 195 had concretions.

If operation does not follow an attack, and localized peritonitis occurs with recovery, the appendix may be left attached or adherent to certain surrounding organs. A considerable portion of the organ, or only the tip, may be attached to the right tube and ovary, or even to the left; also to the bladder, to the cecum, to the ileum, to the duodenum, to the gallbladder or to the stomach.

It is not the purpose in this paper to discuss at length the etiology of appendicitis, as that is largely a matter of the acute form. The condition becomes chronic practically by the same process in all cases, whether the etiologic factor was largely either a predisposing, a contributory, or an essential or infectious one; or whether the infection was direct from the cecum to the appendix, according to Ashcoff, or from certain foci of infection through the blood stream to the appendix, according to Kretz.

The discussion will be directed more definitely to the diagnosis, treatment and end-results.

SYMPTOMATOLOGY

The symptoms of chronic appendicitis divide themselves naturally into two groups—those of the abdomen, and connected more directly with the digestive system, and those outside the digestive system and referred to organs located elsewhere. Of the first, the symptoms within the abdomen, the most constant is pain and soreness in the region of the appendix. This pain is aggravated by exercise, especially by walking and running. It may be so severe as to incapacitate the patient for a few days. The soreness can always be elicited by making pressure with the examining hand and, unfortunately, the patient himself frequently learns to develop pain by making pressure. It is always the cause of considerable anxiety. It may extend down into the right thigh. On the other hand, the symptoms may be entirely gastric, with only slight soreness in the region of McBurney's point. Under these circumstances there may be only the symptoms of a "chronic dyspepsia," such as the discomfort from "gas" in the stomach, loss of appetite, coated tongue, constipation and occasionally nausea. In 400 chronic cases in which operation was performed, 279 patients were constipated, eighteen had diarrhea, and 103 had regular, normal bowel movements; 230 had nausea at times, and 115 of these vomited. Or, again, the symptoms may be definitely those of peptic ulcer with acid eructations, gnawing sensations in the epigastrium, and "hunger pains" relieved by taking food. Sir Berkeley Moynihan[2] has said:

> There is now no longer any doubt in my own mind that the commonest site of a gastric ulcer is in the right iliac fossa. That is to say, in the majority of cases, where the symptoms would justify or compel a diagnosis of ulcer, the patient is suffering from a lesion elsewhere, and more often than not, from a lesion in the appendix.

Occasionally the bowels are loose and contain considerable mucus. John B. Deaver, in his early teaching, called attention to the significance of mucus in the stool in relation to chronic disease of the appendix. To these symptoms may be added the history of acute attacks, occurring from time to time.

Of the second, the symptoms outside the abdomen, much could be written, but little can be said with any degree of certainty. The patient gives a history of one or more of the abdominal symptoms already described, and adds thereto those of nervousness, weakness, headache, backache, hypochondriasis, and many others rather bizarre. There is usually a marked loss of weight. The patient assumes a faulty posture, and gives the physical signs of a general splanchnoptosis. There may be rather definite symptoms referred to the cardiovascular system or to the urinary tract. It is frequently difficult and, in fact, often impossible to recover from the tangle of symptoms the history of an acute attack.

DIAGNOSIS

The diagnosis can be made with only a certain degree of assurance, depending on whether a history of an acute attack can be developed. Without such a history, physical signs and laboratory tests must be taken at a considerable discount. In 400 chronic cases in which operation was performed only 217 patients gave a satisfactory history of having had acute attacks of abdominal pain which could be interpreted as being of the appendix.

It will be found best, therefore, to make the diagnosis by exclusion. In this way it may be possible to eliminate certain diseases, such as chronic peptic ulcer, "latent gallstone," cholecystitis, stone in the right

1. Klotz, Oskar: Some Points in the Pathology of Chronic Appendicitis, Tr. Am. Gastro-Enterol. A., 1918, p. 76.

2. Moynihan, Berkeley: The Gifts of Surgery to Medicine, Brit. M. J. 2: 169, 1913.

ureter or in the kidney, certain chronic pelvic diseases, the various ptoses of the abdominal organs, and also certain so-called endocrine disturbances as well as the more common neuroses. To do this, a thorough routine physical examination should be undertaken, which should be followed by test meals, and examinations of the stools, of the blood, including the Wassermann test, and of the urine, including kidney efficiency tests. A roentgen-ray examination of the entire intestinal tract may be of great value, not so much in giving direct information of the appendix as in determining the presence or absence of disease elsewhere.

The physical examination should, of course, include a careful examination of the abdomen. Of the greatest significance is persistent tenderness at McBurney's point. This may be definite at one time and indefinite at another. It is best elicited by making firm pressure over McBurney's point while the patient is lying on his back with the shoulders elevated and the knees partly flexed. An indefinite tenderness may be developed into a more definite sign by making pressure with the index finger over McBurney's point and then asking the patient, when he is in the position described above, to extend the right knee, hold the leg rigid, and elevate it from the bed or examining table. The diseased appendix, thus pinched between the approximating anterior abdominal wall and the rigid belly of the ileopsoas muscle, gives evidence of extreme tenderness. This sign was first suggested by Meltzer,[3] and goes by his name. It is a procedure which is, of course, applicable only in subacute or chronic conditions. By inflating the large bowel with air (Bastedo's sign), or by exerting pressure downward over the cecum toward Poupart's ligament (Rovsing's sign), pain and tenderness may be produced in the right iliac fossa. Among my cases of chronic appendicitis in which operation was performed, 286, or 71.5 per cent., gave a definite Meltzer's sign. It is interesting to note that in the 400 cases in which operation was performed, rigidity of the right rectus muscle was present in only twenty-three.

By the examination of the abdomen it should be determined whether there is a partial or a general visceroptosis, as this condition frequently is accompanied with symptoms suggestive of chronic appendicitis, although the appendix may be normal. Disease of the genito-urinary organs, especially of the right ovary and tube and of the right kidney and ureter, should be excluded before a diagnosis is made. In an obscure case, catheterization and roentgen-ray examination of the right ureter may be justifiable. In the male patient the investigation is not complete without a rectal examination, and in the married female, without a pelvic examination.

Occasionally the pain from a right sacro-iliac strain may be referred to the abdomen and produce pain and tenderness like that of chronic appendicitis. The aid of a competent orthopedist is therefore often valuable in suspected cases. The gastric crises of tabes dorsalis should be kept in mind.

Finally, a routine examination of the teeth, tonsils, sinuses and eyes, together with an examination of the chest, should be followed out.

Laboratory examinations may not furnish any direct information in establishing the diagnosis of chronic appendicitis, but they are of great assistance in establishing the diagnosis of other conditions which might suggest chronic appendicitis. The constant presence of a gastric hyperacidity with the absence of peptic ulcer is of considerable significance, as it may indicate a pathologic condition elsewhere in the abdomen, the most frequent location being in the right lower quadrant. In 263 chronic cases of appendicitis with operation, in which gastric analyses were made, 189 patients, or 71.9 per cent., had a hyperchlorhydria, forty-seven, or 17.8 per cent., had a hypoacidity, and twenty-seven, or 10.3 per cent., had an achylia. The patients with achylia were, in the majority, such as had a history of great chronicity, were much below their normal health, and revealed at operation extensive pathologic changes by way of adhesions about the appendix and cecum.

The effect on gastric function of extragastric pathologic changes, occurring particularly in the abdominal cavity, has been commented on by others during the last ten or fifteen years. Among these there are Graham and Guthrie,[4] Paterson,[5] Fenwick,[6] Moynihan[7] and Lichty.[8]

A thorough examination of the stool should be made for mucus and parasites, and for blood. The presence of blood and mucus must be carefully interpreted. Occasionally intestinal parasites are responsible for the symptoms. In one of my cases, pinworms were found in the appendix. In a number of suspected cases of appendicitis, successful treatment for intestinal parasites cured the patient. Finally, roentgen-ray examination of the stomach and bowels should be made. Pfahler[9] says that the chronically irritated appendix gives much roentgen evidence of value in diagnosis on account of: (1) localized tenderness, (2) visualization of appendix, (3) fixation, (4) position, (5) kinking or angulation, (6) constriction, (7) abnormal retention and (8) incompetent ileocecal valve. To this he adds later the visualization of fecaliths. To me the demonstration of fixation (adhesions), angulation, constriction and an abnormal retention of bismuth have been of considerable diagnostic value.

If, after the foregoing procedure, the diagnosis is still in doubt, a tentative course of treatment, hygienic, dietetic and medical, based largely on the symptoms, may be undertaken for a period of probably two to four weeks. When this is done with the patient under close observation, especially if it is a patient who will cooperate, a satisfactory diagnosis may often result where otherwise it could not be made. If disease of the appendix is finally excluded, it is likely that such a study will lead to the proper diagnosis.

In following such a course of treatment and of observation there will not infrequently be brought to light the evidence of a distinct neurosis which characterizes a group of patients who present symptoms suggestive of chronic appendicitis. Attention has been called to this especially in the German medical literature recording from time to time the observations of Heidenhain, Küttner, Nothnagel and others.

3. Meltzer, S. J.: On the Contraction of the Ileo-Psoas Muscle as an Aid in the Diagnosis of the Contents of the Iliac Fossa, New York M. J., July 10, 1902.

4. Graham, Christopher, and Guthrie, Donald: The Dyspeptic Type of Chronic Appendicitis, J. A. M. A. **54**: 960 (March 9) 1910.

5. Paterson, H. J.: Appendicular Gastralgia in Appendicitis as a Cause of Gastric Symptoms, Proc. Roy. Soc. Med., Surg. Sec. **3**: 187, 1909-1910; Lancet, March 12, 1910.

6. Fenwick, W. S.: Proc. Roy. Soc. Med., Surg. Sec. **3**: 177, 1909-1910; Lancet, March 12, 1910.

7. Moynihan, B. G. A.: Brit. M. J. **1**: 241 (Jan. 29) 1910.

8. Lichty, M. J.: Influence of Perigastric Lesions on Gastric Secretions, J. A. M. A. **55**: 1799 (Nov. 19) 1910.

9. Pfahler, G. E.: The Roentgen Rays in the Diagnosis of Appendicitis, Tr. Am. Gastro-Enterol. A., 1918, p. 83.

Liek [10] of Danzig warns us of the nervous manifestations which these cases present, and speaks particularly of the spastic condition which may be found in the colon, presenting symptoms like chronic appendicitis. He speaks of these cases as being those of "pseudo-appendicitis," a term not altogether satisfactory.

Liek analyzed 1,000 cases in which operation had been performed, and found among them only 100 definite cases of chronic appendicitis. Of the remainder the greater proportion were patients suffering from certain definite neuroses, and the others were patients having surgical conditions in other parts of the body.

TABLE 1.—OPERATIVE FAILURES

Condition	Number
Chronic appendicitis	243
Chronic appendicitis and pelvic disease	78
Chronic appendicitis and gallbladder disease	44
Chronic appendicitis and peptic ulcer	9
Gallbladder disease	47
Pelvic disease	41
Peptic ulcer	16
Promiscuous cases	39
Total	517

It is not unlikely that many of the patients which the late Dr. S. Weir Mitchell treated so successfully with his system of "rest cure" were cases which we now are too prone to call chronic appendicitis, and are attempting to cure by operation.

TREATMENT

In the great majority of cases, the only treatment which offers a reasonable prospect of cure is operation.

But unfortunately many of these patients have already passed into chronic invalidism, and the kinked appendix, the appendix bound down with adhesions, or containing fecaliths is only an episode in the general ill health. Many of these patients improve with appendectomy only, but the great majority need additional care, dietary, hygienic, orthopedic, mental and social. It is on account of the lack of appreciation of this both by the physician and by the patient, and on account of sometimes hurrying into the abdomen without proper consideration, that the surgery for chronic appendicitis is so frequently unsatisfactory. In 517 consecutive cases, compiled from a general and consulting practice, in which the patients had already been operated on for various conditions and in whom the complaints "after the operation were the same as before the operation," 243 had been operated on for chronic appendicitis. Of the remainder, seventy-eight were operated on for appendicitis and pelvic disease, forty-four for appendicitis and gallbladder disease, nine for appendicitis and peptic ulcer, forty-seven for gallbladder disease only, forty-one for pelvic disease only, sixteen for gastric ulcer only, and thirty-nine for promiscuous conditions including all kinds of operations.

It seems, therefore, to be the most unsatisfactory surgery of the abdomen. It is of considerable significance that in most of these patients the abdominal scar was small, only an inch or more long, oblique, and in such a position that nothing but the appendix could have been seen at the operation. With all the chances there are of being mistaken in the diagnosis of chronic appendicitis, it would seem desirable to make a generous right rectus incision in these cases and, unless there is a contraindication, make a thorough examination of all the abdominal organs, with as little traumatism as possible.

Compared with the results of operation for acute appendicitis, that for chronic appendicitis is a great disappointment, as is shown by Tables 2 and 3, which represent 1,440 cases, 120 of which were diagnosed as acute and 1,320 as chronic.

The question of correct diagnosis in the nonoperative cases is, of course, pertinent. It is probably safe to say that not more than 60 per cent. of the diagnoses are justifiable clinically. The remaining 40 per cent. may consist of patients who suffer from certain neuroses, or who may have a pathologic condition elsewhere in the body; but of this we could not be certain at the time.

The patients with acute appendicitis were definitely well after the operation; those with chronic appendicitis showed satisfactory results in about 60 per cent. of the cases in which operation was performed. Some of these were not definitely cured, but were better than before the operation. The question arises, Why are the results so unsatisfactory; why were there approximately 40 per cent. of failures? This is a difficult question to answer, but it is no doubt the crux of the whole problem.

The reason for the practically 100 per cent. recoveries of the acute cases is, no doubt, that there was a definite acute pathologic condition which was promptly recognized and successfully removed. Of the two patients who died, one had a perforation which had occurred about three weeks before the operation; a subphrenic abscess followed. The other developed a postoperative pneumonia. In these cases as well as the chronic cases, the operations were performed by about thirty-five different surgeons. The reason for the unsatisfactory results among the chronic cases can be seen more clearly if a certain classification or grouping of the patient will be followed. The patients suffering from a real chronic appendicitis or from a so-called "pseudo-appendicitis" will gradually arrange themselves into four groups. The term "gradually" is used advisedly and with a purpose, for it is not always possible at once to place the patient into the proper group. An operation may occur before the case is properly classified. But when all is known which can be known of a patient, it is usually found that the classification covers about all conditions. It is as follows:

TABLE 2.—CASES OF ACUTE APPENDICITIS

	With Operation	Cured	Died
Males	50	49	1
Females	35	34	1
Total	85	83	2
	No Operation	**Apparently Well**	**Died**
Males	12	12	0
Females	23	23	0
Total	35	35	0

Group 1. ***Those patients in whom there is a definite pathologic condition confined to the appendix and its immediate surroundings.*** The pathology is of the nature already described for chronic appendicitis. The

10. Liek, E.: Der nervöse Darmspasmus, Ein Beitrag zur Differentialdiagnose der Appendizitis, München. med. Wchnschr., Dec. 25, 1917, p. 1659.

history is usually satisfactory in that there is rather definite evidence of preceding attacks. In these the results are almost invariably good. The patients recover their health following the operation.

Group 2. *Those patients in whom there is a definite pathologic condition in the appendix, and, in addition, extensive adhesions about the cecum,* possibly an adherent omentum, ptosis of the viscera with adhesions scattered here and there, such as at the hepatic flexure invading the gallbladder region, or about the pyloric region. The intestines are congested; the walls are thickened and give evidence of grave secondary pathologic changes. In these the appendix may be removed and the adhesions broken, but the results naturally are not satisfactory and the symptoms usually continue. These are the cases with multiple operations, ten, twelve or fourteen, occasionally ending in a partial or complete colectomy as practiced by Sir Arbuthnot Lane.

Group 3. *Those cases in which there is little or no pathologic change in the appendix* beyond an obliterating appendix. They present pronounced nervous symptoms. These do not improve, or if they do it is largely the result of the psychic effect.

Group 4. *Those cases in which there are no pathologic changes of the appendix, but pathologic changes in other organs,* such as the gallbladder, stomach, right kidney and right ureter, pelvic organs or pancreas.

TABLE 3.—CASES OF CHRONIC APPENDICITIS

	With Operation	Cured	Died
Males	159	125*	4
Females	241	100*	1
Total	400	225	5
	No Operation	**Well**	**Died**
Males	459	(?)	0
Females	461	(?)	0
Total	920		0

* Approximately.

These are usually the cases which result in a small abdominal incision through which the appendix is delivered, but which do not permit of careful exploration of the abdominal cavity. They are not surgical failures, but diagnostic mistakes.

It will be seen that in certain patients, such as those of Group 2, other treatment besides surgery is necessary. A long course of dietetic, medical and hygienic care may be sufficient to restore health without an operation. Or, if an operation is done, such a course must often be followed persistently and intelligently as an after-treatment before the cure is realized. These constitute a difficult group, since it is no easy matter to decide what course to pursue, and whatever course is undertaken the results are usually unsatisfactory. It requires the closest cooperation of the surgeon and the internist.

The cases constituting Group 3, in which the patients suffer from a neurosis, are particularly difficult, especially if the patients are so unfortunate as to have already been operated on. The psychic effect of the operation is usually unfortunate, and they drift into chronic invalidism. Occasionally, however, the patient feels such relief from the knowledge that he really has not had appendicitis, or that his appendix is now removed, that he immediately begins to make substantial improvement leading eventually to restored health.

The nonsurgical care of patients suffering from chronic appendicitis should receive careful consideration. It is based on the data obtained in the comprehensive examination which has already been instituted. These patients compose a large percentage of the chronic invalids one meets. They are undernourished, dyspeptic, constipated, ptotic, hypochondriacal and neurotic. Frequently, if operation is not clearly indicated, the treatment is best begun by forced feeding, thus replacing the normal amount of fat which the abdomen should contain to support the organs. After this graded physical exercise should be instituted, and continued until the patient becomes to a degree athletic. He should be taught to sit, stand and walk properly. The bowels should be regulated by following proper physiologic lines in diet and exercise. Cathartics should be avoided. The persistent habit of introspection which the dyspeptic unconsciously develops should be broken up. Healthful occupation and recreation should be required, and in every way the physical and mental health should be brought to a higher level.

If an operation is necessary, such as for removal of the appendix or for clearing up of foci of infection, it should be done as soon as the physical condition will permit. It is unfortunate when these patients are left in doubt about a suggested or a proposed operation, and it is also unwise to lead the patient to expect more from an operation than the conditions actually warrant. Such a course will require a great deal of time and patience, but this is nothing as compared with the suffering and the disappointment which may follow an operative failure.

CONCLUSIONS

1. The diagnosis of chronic appendicitis is often beset with difficulties.
2. While surgery is the accepted treatment, the results are frequently unsatisfactory.
3. The comparative satisfactory results following operation for acute appendicitis are convincing evidence of the necessity for a more careful study of the more or less acute conditions of the abdomen. Prevention of chronic appendicitis is easier than cure.
4. Hospital statistics bearing upon the operative results of chronic appendicitis are unreliable, as the recovery from the operation is considered as synonymous with a cure.
5. In certain cases a course of medical treatment is necessary before a cure is realized. In other cases, surgery may be contraindicated even though medical treatment affords only an approximate cure.

4634 Fifth Avenue.

ABSTRACT OF DISCUSSION

DR. LOGAN CLENDENING, Kansas City, Mo.: Can physiologic or anatomic pathologic changes in the appendix cause chronic gastric symptoms? From discussing this matter with various internists and gastro-enterologists I am led to believe that my experience with it is the experience of most members of this section. Several years ago we should have been very enthusiastic about the relation of appendicitis to gastric symptoms; but as time has gone on and we have had various discrepancies in the stories that patients tell us after an appendectomy, our enthusiasm has somewhat cooled, and this experience Dr. Lichty has tabulated for us very well. About 60 per cent. of the patients are relieved, and about 40 per cent. are not relieved. Among my patients about 70 per cent. were relieved of gastric distress by appendectomy alone from five to seven years after operation. The question of pathology is important, and while we all agree with Dr.

Lichty that there is a difference between the clinician's point of view and the pathologist's point of view, yet that seems to be a very dangerous doctrine. But it is possible. One condition in which a gastric symptom can be associated with a pathologic condition of the appendix is hematemesis. Several years ago I reported one such case. There were several large lymph glands in the meso-appendix, and all through the omentum there were little shotty lymphatics. The serosa of the stomach was congested, and small venules could be seen like those on the drunkard's cheek. There was no gastric ulcer. The hemorrhage from the stomach ceased after appendectomy. Another small group of cases consists of persons who suffer from ulcer-like symptoms for a long time and finally have an acute attack of appendicitis. The appendix is removed and the gastric symptoms are relieved.

DR. LEON T. LEWALD, New York: I am one of the advocates of the possibility of making the diagnosis of appendicitis by the retention of opaque substances in the appendix, provided there is a proper time interval between the administration of the opaque substance and the observation of the retention, and the correct interpretation is put on this point. At the Washington meeting Dr. White spoke of some cases in which there was retention in the appendix, and the question was brought up as to whether there was a drying out of the opaque material or whether perhaps there was some other cause. I have made two observations since then and attempted to demonstrate the drying out of barium in a rubber tube, and it does not follow out exactly that line. My impression is that the condition is due to a coating. A roentgenogram of the appendix after its removal is of value. I have analyzed a large number of appendixes in which there has been retention for from three days to three weeks, and in many cases I have been able to find a coating.

DR. J. J. GILBRIDE, Philadelphia: Chronic appendicitis gives rise to upper abdominal symptoms, and most of us believe that it frequently gives rise to upper abdominal disease. There are cases of chronic appendicitis with local symptoms, and there are cases of chronic appendicitis without local symptoms. It is well known that chronic appendicitis may simulate duodenal disease or gallbladder disease. A great number of those patients whom I have seen manifested symptoms which were quite suggestive of duodenal ulcer. Many of them did not have marked symptoms indicative of disease of the appendix. In these cases the pictures were often sufficiently clear for one to make a positive diagnosis of appendicitis. It is my experience that but few of these patients give a history of recurrent attacks of appendicitis. The cases I have seen usually required postoperative treatment. They do not respond at once, but necessitate dietetic and hygienic treatment prolonged over a period of several months before full relief is obtained. In the case of an acute attack this simplifies the matter, because it brings the patient to the operating table. The symptoms are often sufficiently severe to require that the patient be referred to the surgeon, and the patient may go on suffering from periodic intermittent attacks of so-called indigestion.

DR. JOSEPH C. BLOODGOOD, Baltimore: In the early days, acute appendicitis predominated. There were few cases of chronic appendicitis. Gradually the number of cases of chronic appendicitis became very much greater than those of acute appendicitis, and since that time the cases of chronic appendicitis have predominated. In the days before the advent of the roentgen ray and gastro-enterology, we based our indication for operation on the clinical history. And the number of cases in which there was no relief was relatively small. They were cases that today are easily recognized, cases of stone in the kidney or in the ureter; relatively few cases of duodenal ulcer, practically no cases of gallstones. At present the results, relatively, in the treatment of chronic appendicitis are worse than ever before. I think the reason for this is that we are overrun by patients whose cases are very difficult to diagnose. The appendixes that are taken to the laboratory and examined may show nothing even when the history is positive, but those people are well, and that is what we are after. Then we must remember that even a definite history of chronic appendicitis does not exclude another lesion. I remember that when I began to do surgery of the appendix, in ten minutes after a patient came into the hospital I had made the diagnosis of chronic appendicitis, because none of the difficult cases came to me. Those people with chronic appendicitis had one or more definite acute attacks. Today I know of no group of cases that takes more of our time than those in which we might designate the condition as a possible chronic appendicitis. Nothing is more difficult in a case of indigestion than to exclude an organic lesion. There is a large group of cases in which the appendix has been removed after exhaustive examination and the surgeon finds nothing; but the mere fact that these patients are not relieved is not an indication that the operation is a failure. They would have been just the same if not operated on. We shall do less harm by removing an appendix than otherwise. We find nothing, and remove the appendix as we come out. But in that group there should be no deaths from organic disease.

DR. WALTER C. ALVAREZ, San Francisco: I think we will agree that the diagnosis of chronic appendicitis has been made too frequently, especially by the general practitioner and by the surgeon who does not examine these cases very carefully. During the last ten years I have been so disgusted by sins committed along this line that I have swung to the opposite extreme. I do not feel like making this diagnosis unless I can elicit a history of more than one attack. A point I wish to emphasize particularly is that we must have fewer of the two finger incisions. Often the surgeon is very proud of such an incision, but the patient is not relieved. There is no reason why the surgeon should not have explored every organ in the abdomen, when he probably would have found something wrong and, perhaps, cured his patient, instead of making it necessary in many cases to have another laparotomy.

DR. SEALE HARRIS, Birmingham, Ala.: I think the surgeons rather than the gastro-enterologists need to know the facts that have been brought out. While not quite sure of my statistics in this matter, I am certain that more than 25 per cent. of patients who come to me for gastro-intestinal conditions have had the appendix removed, and many of them have ulcer or gallstones, and some have multiple lesions. The surgeon should be impressed with the fact that it is almost criminal to make a small McBurney incision when operating for suspected chronic appendicitis, unless the patient has definite symptoms of acute appendicitis, because in all probability it is not appendicitis that is causing the condition. I recall a case in which there were gallstones, ulcer of the stomach and also a chronically inflamed appendix. The patient who is without a history of recurring definite attacks of pain in the abdomen, what is generally called by laymen acute indigestion, has probably not had chronic appendicitis. I am almost beginning to believe that there is no chronic appendicitis except when there have been acute attacks. It has been suggested, and I concur in the opinion, that patients operated on for chronic appendicitis should have postoperative medical treatment. I believe, however, that if they have preoperative medical treatment, many will be relieved of symptoms and not require operation. The mere fact that a patient has pain and some tenderness in the right iliac region does not mean that chronic appendicitis exists. There may be colitis associated with intestinal stasis, particularly in the cecum, when by the institution of treatment for intestinal stasis, putting the patient on a low protein diet, with exercises to develop the abdominal muscles and to correct the colonic adhesions, combined with measures to regulate the life of the patient so he can get well, a large proportion of these patients who are supposed to have chronic appendicitis will get well without the necessity of operation.

DR. FRANKLIN W. WHITE, Boston: The roentgen-ray method is a very delicate one in the diagnosis of chronic changes in the appendix and clearly shows fixation, kinking, changes in shape, obliteration, slow emptying of the fecal material, etc.; in short, it gives many facts about the appendix, but it does not tell us what to do. Many times when the report comes from the roentgenologist "chronic appendicitis," our impulse is to do immediate appendectomy. This is not a wise attitude. Frequently chronic changes are

found, such as poor mobility, small fecal masses, peculiar shapes, chronic obliteration and moderate delay in emptying, which apparently do the patient no harm, and often we do not benefit him at all by taking the appendix out as result of such an examination. I have been following up quite a series of patients for four or five years, in whom the roentgen ray has shown definite chronic changes in the appendix, and have found quite a large number in whom these changes apparently made no difference to the patient at all. He kept his appendix and was happy.

DR. FRANK SMITHIES, Chicago: We are forgetting one of the very interesting and important points of Dr. Lichty's paper; namely, that about 60 per cent. at least of persons who had some kind of queer, long drawn out intestinal or gastric upset, were cured or relieved by a certain form of treatment —removal of the appendix or an abdominal exploration. This is an important fact. It seems to me that we should not go to the other extreme and say that our patients who have what we carelessly diagnose chronic appendicitis should not receive the benefit of a surgical exploration. Certainly it is better to have these patients sick in bed for a little while rather than wandering from place to place as chronic abdominal invalids, treated for colitis, with infection about the large bowel, for peptic ulcer, for suspected carcinoma, etc. It is better to have these persons submit to a simple exploration, and if the appendix be diseased, remove it, but at the same time look about. I should say that certainly 50 per cent. of the cases of so-called gastric ulcer would be cured permanently if a laparotomy were done. It has come within the experience of all of us to note how rapidly persons with so-called ulcer symptoms are cured and remain cured following exploratory laparotomy at which appendicostomy is a part. In many of these persons it has seemed to me that the appendix infection, which can be proved, is only a part of a general infection throughout the large intestine. There can be seen patches of vascular engorgement and changes in musculature throughout the colon; and the appendix is then only an easily removable focus of infection. It is to be expected in such cases that physiologic rest of the bowel after operation will give these patients relief for a time, but that afterward, if they still go on living as before, we shall have, not a lighting up of the appendical trouble, for the appendix has been removed, but a recurrence of symptoms due to these infected areas of the large bowel again exhibiting a pathologic condition. Consequently, colonic spasms will recur, when we have a patient who is again ill, and whose symptoms are quite similar to those which he exhibited previous to his appendicectomy.

DR. R. WALTER MILLS, St. Louis: Relative to the subject of the diagnosis of appendicitis, clinically versus the roentgen ray: The roentgen ray shows that practically all appendixes are abnormal, a reflection of the findings of the pathologist and of the surgeon at operation. The diagnosis should never be based solely on a roentgenologic examination. The diagnosis is essentially clinical and should be based on the history of attacks of local pain, discomfort, tenderness and suggestive digestive disturbances. The roentgen ray is of great aid in several ways: First, in localizing tenderness of the appendix, which, without fluoroscopic control, I have come to regard as almost a farce. In many instances, when clinical evidence would indicate a pathologic condition of the appendix, it is almost impossible to locate tenderness without fluoroscopic control. Practically always the tenderness is at the base of the appendix, and often special manipulations under fluoroscopic control are necessary in order to elicit this tenderness. The roentgen ray often detects dislocations of the appendix and cecum, indicating the results of pathologic processes originally appendicular, besides valuable information as to appendicular structural changes. Relative to the matter of digestive disturbances associated with chronic appendicitis, in a considerable number of cases I have been able to show that gastric motility is demonstrably slow, probably as a result of reflex, perhaps protective inhibition. Such impaired gastric motility may account for the gastric symptoms.

DR. JOHN A. LICHTY, Pittsburgh: I think we all agree that at times a roentgen-ray examination may be very helpful. Dr. Bloodgood has brought out some important points with reference to the attitude of the surgeon toward these patients. There is one point regarding which I shall, however, have to differ with him somewhat, and that is as to the likelihood of there being no bad after-effects from operative procedure, even only exploratory. I am always ready to agree to operation in a chronic case of appendicitis, provided I am quite convinced that there has at one time been an acute attack, and especially if I can get an intelligent idea of the condition immediately following the acute attack. Those patients get well if operated on. But somehow or other, when such a history cannot be obtained, operation begins a chain of operations to which there is no end. I did not exaggerate at all when I said I had seen patients who had been operated on fourteen times, the first operation having been done for a supposed chronic appendicitis. Some of my own cases of postoperative symptoms are in the group presented in this paper, and I do not wish to think that I consider myself immune from the mistakes that have been mentioned. These are the cases of which I can speak definitely. After operation the subjects were very much worse off than before. I am sorry Dr. Alvarez did not tell us some of the things he knows concerning the spastic colon in relation to chronic appendicitis. I might say that the patients referred to in my paper were operated on by about thirty or thirty-five different surgeons, in hospitals and out of hospitals, so that I do not claim anything unusual so far as the mortality is concerned. It will be noticed that there is a mortality among the chronic cases that should be considered carefully.

HEART DISEASE IN PREGNANCY*

SELIAN NEUHOF, M.D.

Visiting Physician, Central and Neurological Hospital; Associate Attending Physician, Lebanon Hospital

NEW YORK

The subject of marriage in girls, and pregnancy, in women with cardiac disease is naturally of vital interest from the standpoint of the obstetrician, the general practitioner and the cardiologist.

With reference to marriage in girls with valvular disease, views vary from the extremely narrow one of absolute interdiction in those with any type of heart trouble to the physician's consent to marriage in those with even advanced heart disease. Marriage (without pregnancy) has as its chief dangers the excitement and heart strain incidental to coitus. That this can be a real danger is shown by occasional instances of hemoptysis immediately following coitus in those with mitral stenosis. In those with a tendency to or with actual tachycardia without decompensation, the sexual act may induce or continue a cardiac neurosis superadded on an actual organic lesion. While there is no invariable rule, marriage should not be advised in those who have suffered from any decompensation, even slight, or from any inflammatory rheumatic recrudescence or recurrence of an existent endocarditis, for a period of two years prior to the time of expected marriage. This applies to lesions of all kinds. Two years, of course, is a purely arbitrary limit, but it comports best with the probability of a long, quiescent period after marriage. When the endocardial lesion has become stabilized, that is to say, when compensation is perfect and there has been no lighting-up of the endocardial lesion, and when there is no immoderate degree of hypertrophy, marriage may receive the physician's sanction. I shall not enter into such correlated social questions as the general advisability of marriage

* Read before the Brooklyn Cardiological Society, May 31, 1922.

in those with heart disease, the economic factors involved, and the possible hereditary effect on the offspring.

PREGNANCY

A study of statistics of lying-in institutions reveals little of value from the cardiologic standpoint, for, until the recent paper by Pardee,[1] the statistics were as a rule based on patients who entered the hospital already decompensated, with only a cursory or, often, no account of the cardiac history prior to hospital admission. Such meager reports emphasize the importance of collaboration and cooperation between obstetrician and cardiologist.

My experience with exercise tolerance tests on the blood pressure and heart rate in pregnancy with heart disease has been limited. I have, however, studied the effect of various types of exercise on the blood pressure in the nonpregnant with heart disease, compensated and uncompensated, and I have found no guide in such studies either as to the severity of the lesion or as to probabilities of decompensation. The chief reason for this seems to be extreme lability of the vasomotor mechanism, a variable factor in each individual.

An exercise tolerance test by means of swinging a dumb-bell of known weight a definite number of times, and noting its effect on the cardiac rate, dyspnea and the length of time required for the pulse rate to again reach its normal is another modification of older tests to study cardiac energy and reserve. I myself have never employed this or similar tests in any form of heart disease as a standard of fitness, because I believe that they cannot gage the patient's sensations. After all, the best tolerance test can give information only at the time of the test. Besides, as with the vasomotor mechanism, different persons—normal and those with heart disease—respond very differently, and not according to set rules when their hearts are raced by exercise. It appears to me that such tests have too many exceptions to be of any real value.

A study of the dangers of pregnancy with heart disease can best be classified under cardiac neurosis; decompensation, and recrudescent or recurring endocarditis.

Cardiac Neurosis.—I refer here to a superadded neurosis in addition to the actual cardiac lesion. In another connection,[2] I recently indicated the importance of such factors as fright and excitement as initiators of symptoms, even death ultimately, in otherwise stabilized cardiac disease. In pregnant women with cardiac disease and a superadded neurotic factor, with otherwise perfect compensation and with no recurrent endocarditis, the cause of the neurosis is likely to be dread of the strain of childbirth. The chief symptom is moderate tachycardia with constant and annoying consciousness of the heart action. This may so upset the patient that it leads to lack of sleep and to such extreme neurasthenic phenomena—weeping, dyspnea, anorexia, vomiting, etc.—that interruption of pregnancy may have to be advised. This happened to two women who came under my observation:

One, aged 21, pregnant three months, with an old stabilized double aortic lesion, dreaded death during labor. The only symptom was tachycardia, with an average cardiac rate of 100 a minute. Interruption of pregnancy was advised and carried out. The patient was told, however, that if at a subsequent pregnancy she should be less nervous, there would probably be no reason why pregnancy could not be carried to full term. She again became pregnant within one year, was reconciled to her fate, and had a normal delivery at full term.

A young woman who had a double mitral lesion and who had been pregnant six weeks was obsessed with the idea that she would die at childbirth, wept constantly, and, despite medication, was unable to sleep. The heart action was regular, the average rate, 110 a minute. Interruption of pregnancy was advised and carried out. Later, she again became pregnant and was delivered by cesarean section.

Decompensation During Pregnancy.—Frank decompensation—usually found in neglected or insufficiently observed cases—is readily recognized. Dependent edema, constant dyspnea, congestion of the lungs, and tachycardia are the cardinal symptoms. Unless relieved by therapeutic measures—rapid intensive digitalization (1½ ounces [45 c.c.] of the tincture or twelve digitan tablets within two or three days)—severe cardiac failure calls for immediate interruption of pregnancy, no matter at what stage. In those in the early months of gestation with milder degrees of decompensation which yields to therapy, and when the pregnant women express an earnest desire to carry out pregnancy, an attempt may be made to continue pregnancy at least to the stage of viability, if not to full term. If, however, compensation in these milder decompensated cases is not fully restored, approximately at the end of a week or two of proper therapy, or if there is evidence of recurring heart failure after compensation has been restored, it should serve as a warning and indication that further delay is dangerous, and that interruption of pregnancy is called for.

Recrudescent or Recurring Endocarditis.—This has to my knowledge received no mention in the literature, yet I regard it as dangerous as decompensation. Perhaps because of its very insidiousness it has escaped general attention, for gestation in some unknown fashion seems to light up and activate dormant or slightly active endocarditic processes. Those who had experience with the influenza pneumonia pandemic of 1919 will doubtless recall the sad plight and terrible fatality of the pneumonias occurring in pregnancy.[3] Then, too, it was puzzling—and it is still unanswered—to understand why simple uncomplicated pregnancy with even mild pneumonia should so frequently lead to death. Hints of endocarditic recurrences during pregnancy may be found in occasional mild sore throats, occasional slight fever, the presence of local dry pericarditis, of louder murmurs transmitted to larger areas, of fleeting rheumatic pains, of occasional extrasystoles, of occasional sticking or stabbing pains in the heart, of fleeting tachycardia, and of subjective dyspnea without tachycardia. Unless such symptoms are checked or their significance is understood, they may gradually merge into various degrees of heart failure. Treatment of such insidious recurrences depends on our usual remedies—salicylates in large doses, bromids and phenobarbital (luminal). Heart failure, should it supervene, calls for its proper therapy.

The classification given above refers to all types of endocardial lesions. The various lesions require some individualization.

Patients with quiescent, compensated, nonhypertrophic mitral regurgitant lesions are the most favor-

1. Pardee, H. E. B.: The Fitness for Pregnancy of Women with Heart Disease, J. A. M. A. **78**: 1188 (April 22) 1922.
2. Neuhof, Selian: The Neurotic Element in Organic Cardiovascular Disease, New York M. J. **115**: 80 (Jan. 18) 1922.
3. Neuhof, Selian: Clinical Aspects of the Influenza Pandemic, Interstate M. J. **26**: 14 (Jan.) 1919.

able for pregnancy. Decompensation, when present, is likely to be milder and to respond more readily to therapy than the other valvular types.

While mitral stenosis is certainly not the absolute contraindication to pregnancy that had perhaps been generally believed (I know of one woman who had had eighteen children), it constitutes, I believe, a greater danger than the other types of valvular lesions. This seems to depend on the more rapid production of an annoying tachycardia, on hemoptysis from pulmonary infarcts, and on bronchitis with sibilant breathing resembling bronchial asthma. None the less, even patients with mitral stenosis and auricular fibrillation (complete irregularity of the heart action) have been known to bear several children with no increase of the cardiac symptoms. Thus, I had under observation one woman with a double mitral lesion and auricular fibrillation, the mother of four children, who from the history had probably had her cardiac irregularity throughout her various pregnancies and labors.

Patients with rheumatic aortic lesions—especially those with aortic regurgitation without extreme ventricular hypertrophy—are likely to complain chiefly of tachycardia. When the heart is massively enlarged, continued and violent tachycardia is likely to be the rule.

Regarding the general question of cardiac strain incident to pregnancy and labor, much has been written, but, on the whole, we possess no accurate information or knowledge of the many factors involved. Undoubtedly the demands made by the growing fetal circulation, and interference with venous return in the splanchnic area by the growing uterus and by the displaced abdominal contents are physical factors of importance during pregnancy in those with diseased hearts. Added to these is the cardiac strain incidental to labor itself. Bearing down expulsion pains, by producing venous congestion and by the holding of the breath, unquestionably call for increased cardiac energy, and hence, cause cardiac strain. Such efforts may finally result in more or less continuous dyspnea. Prolonged labor—dry labor, for example—by interfering with sleep and by keeping the patient's nervous condition keyed up and on edge may gradually interfere with and decrease an already diminished cardiac reserve, so that more or less obvious signs of mild heart failure, especially dyspnea and tachycardia, may finally eventuate. In addition, the obstetrician can rarely give definite information, especially in primiparas, as to whether the labor is going to be easy or difficult, quick or slow. All these questions—some answerable, some not—are intimately bound up with the method of procedure to be followed during labor and, more particularly, at the stage of viability. At full term, labor should naturally be shortened and made as easy as possible for the patient. Pituitary extract, when indicated in those with normal hearts, is also indicated in those with heart lesions. Forceps should be applied as soon as the procedure is considered safe.

With reference to induction of labor at the stage of viability, the choice between divulsion with bags and cesarean section arises. The former is very likely to give rise to a tedious labor with all the cardiac disadvantages just referred to. Regarding cesarean section, it is perhaps surprising to observe how well women with heart disease withstand the operation. My personal experience has been limited to two cases, in both of which there were mitral regurgitant lesions. One patient had moderate dyspnea during the last two months, the other during the last month of pregnancy. In the latter, the dyspnea responded quickly to rapid digitalization, so that, at the time of operation, compensation was fully restored. After cesarean section in the two cases, the cardiac condition was satisfactory during and immediately after the operation. There was no untoward rise of the pulse rate. Dyspnea, the main symptom, disappeared within twenty-four hours. The succeeding days showed a steady improvement; indeed, the heart reacted no differently than after any skilfully performed cesarean section in those with normal hearts. Of interest is the previous cardiac history of one of these patients. This cesarean section was performed at her third pregnancy. Her second labor lasted one week. She stated that it took months for her heart finally to recuperate so that she could walk comfortably and go about her household duties. The last time I saw the patient was two weeks after operation. The cardiac rate was normal. She felt perfectly well with the single exception that she could not yet lie comfortably on her left side. From all indications she will very probably recuperate perfectly from the cardiac standpoint by the time she is allowed out of bed, for it is the laparotomy, not the heart, that keeps her in bed at present. This is an instance in which the operation saved her not only the cardiac strain of labor but also its annoying, long continued after-effects.

One word of caution is necessary regarding cesarean section, and that is that compensation should be restored as much and as quickly as possible by thorough digitalization before operation.

SUMMARY

We possess at present no instrumental guide or tolerance test which can adequately measure the cardiac reserve of the diseased heart of the pregnant woman. Each case must be individualized, and the presence or absence of heart failure noted. The best clinical guide for heart failure is a detailed study of the patient's symptoms, together with a detailed study of the physical signs. Cardiac neurosis, decompensation and endocarditis recurrences seem the best inclusive groupings of all types of cardiac symptoms that occur in pregnancy with heart disease. The degree of decompensation and the month of pregnancy together determine the type of procedure. Decompensation that does not quickly and permanently react to medication requires interruption of pregnancy at any stage. When viability has been reached and decompensation is moderate or absent, cesarean section, when skilfully and rapidly performed, seems to be well withstood by the diseased hearts of pregnant women. It prevents the cardiac strain incidental to labor; it may likewise prevent a lingering, cardiac recuperation following labor. Should the woman come to term, the labor should be shortened as much as possible. Ether is the anesthetic of choice.

1000 Park Avenue.

Syphilitic Aortitis.—Not all dilated aortas are the seat of a syphilitic invasion nor is every aneurysm due to the Spirocheta Pallida, but it is undoubtedly true that the greatest single factor in producing an infective aortitis is syphilis. Furthermore, Turnbull found that specific aortitis was by far the most constant lesion found in syphilitics at necropsy, and Hubert concludes that aortitis comprises 70 per cent. of all visceral syphilis. Wilson, *Canad. M. A. J.*, May, 1922.

Clinical Notes, Suggestions, and New Instruments

PENETRATING WOUND OF PERINEUM WITH PUNCTURE OF THE INTESTINE

FREDERICK C. WARNSHUIS, M.D., AND MAX LAMPERT, M.D.,
GRAND RAPIDS, MICH.

This case of unusually severe intra-abdominal injury presents the value of prompt operative interference and reiterates the value of thorough drainage in such types of intra-abdominal trauma.

REPORT OF CASE

History.—G. T., a farmer boy, aged 16, admitted to the hospital at 7 o'clock one evening in June, 1922, had slid down the side of a hay stack at noon that day and landed on the broken handle of a pitchfork that was standing alongside the stack. The handle penetrated the perineum on the right side about an inch from the rectum. He pulled out the handle, lay down on the ground for about an hour, and then walked to the farm house. There was no severe hemorrhage. The boy stated that the handle penetrated a distance of 6 or 7 inches. A physician saw him about five hours later. The boy was complaining of severe abdominal pain. Morphin and codein were given to control the pain. He was conveyed to the hospital, a distance of 24 miles, and was seen at 7:30, approximately eight hours after the injury. He had not vomited. The previous history was unimportant.

Examination.—The boy was well nourished and healthy. He was evidently suffering considerable pain, and was restless. The temperature was 101.4; pulse, 118; respirations, 18. The color was good. There were no signs of hemorrhage or shock. The abdomen was hard retracted, with spastic recti. The boy complained of pain and cramps in the lower abdomen. On general percussion there was dulness. A catheterized specimen of urine was clear, with no blood. To the right of the rectum there was a ragged, penetrating, stellate wound, which did not bleed. No trauma or laceration of the rectum was detected on proctoscopic examination. A diagnosis was made of penetrating wound of the perineum, and intra-abdominal trauma. The diagnosis was based on the nature of the injury, acute abdominal pain and muscular rigidity, rising pulse, and absence of a puncture wound of the rectum. Immediate operation was advised and accepted.

Operation.—At 9 o'clock, under ether anesthesia, a median incision was made. There poured out fluid and intestinal contents. Food and fecal material were widely disseminated among the intestinal coils. Exploration revealed a lacerated wound of the ilium, about 16 inches from the cecum, through which the intestinal contents were escaping. The wound of the intestine was closed with two layers of inverting suture. There was no other injury to the bowels, though they were covered with lymph exudate and were deeply injected. The penetration of the peritoneal cavity was at the right of the pelvic peritoneum and did not involve the ureter or the prostate gland. The abdomen was freely flushed with saline solution. Two tube drains to the pelvis were inserted. The abdominal wound was closed. On exploration of the perineal wound, the examining finger came in contact with the abdominal drainage tubes. A tube was inserted through this wound into the lower abdominal cavity, thereby attaining through and through abdominal drainage. The tube was retained by a silkworm suture. The time of operation was thirty-five minutes. The pulse at the close was 110.

Postoperative Course and Treatment.—At no time did nausea or vomiting occur. There was good recovery from the anesthetic. Antitetanic serum, 1,500 units, was given. Continuous proctoclysis was given. The patient was kept in Fowler's position. Morphin was given in sufficiently frequent doses to keep the respirations between ten and twelve. Frequently changed, moist, hot pads were applied to the upper abdomen and both sides. Water was given freely by mouth. At the end of twenty-four hours, the pulse was 136, temperature, 102.4. There was slight epigastric distention. At the end of second day the pulse was 112, the temperature, 101.2. Morphin and local moist heat were continued. The color was good. There was free water intake. The patient retained rectal saline solution well. At the end of the third day the pulse was from 90 to 100, the temperature, 100. The treatment was unchanged. Albumin water and buttermilk were given at intervals of three hours. Morphin was discontinued. The abdomen was soft. On the fourth day the pulse was from 68 to 82, the temperature, 99.6. There was a spontaneous, normal bowel movement. The subsequent course was uneventful. There was considerable serous, cloudy drainage the first thirty-six hours from the perineal and abdominal tubes. This gradually subsided, and at no time was it purulent. The tubes were removed on the fifth and sixth days. The wounds were packed lightly and gradual closure ensued. The bowels were normal, a voluntary bowel movement continuing daily during the patient's hospital residence. Nourishment was gradually increased after the fourth day. The urine was voided, and no need for catheterization ever presented itself. The patient was dismissed from the hospital on the sixteenth day, in good condition. There were no indications of suppuration in the healed incision or the penetrating wound.

COMMENT

Pain is usually one of the first and most constant signs of injury to the abdominal contents, its character depending on the amount of fluid escaping into the peritoneal cavity. Associated with the pain is the spasm of the abdominal muscles, especially the recti. In this instance the severe pain and abdominal muscle rigidity gave ample evidence of visceral trauma, demanding prompt operative interference, irrespective of the location and lack of local evidence at the site of the original injury.

Mortality increases in direct and rapid proportion to the hours intervening between the time of injury and the operation. Mortality will be reduced, the more prompt the operation. When doubt exists, operation should be resorted to rather than to wait for definite symptoms. If prompt, early operation reveals no visceral injury, no harm has been done. On the contrary, early, prompt operation when visceral injury exists enhances intensively the patient's recovery.

Drainage properly placed and of ample size is extremely essential. The tubes may be removed on the fifth day, as a rule. Soiling of viscera, by intestinal contents, is best removed by free saline flushing and by vacuum aspiration, though opinions are frequently expressed to the contrary.

These classes of intra-abdominal visceral trauma should receive active treatment as potential acute peritonitis. Our experience has been that morphin should be given in sufficient dosage to reduce the respirations to between ten and twelve, and to maintain that respiratory rate for three or four days. To envelop the whole abdomen with frequently changed, hot, moist applications, and to flood the system, so to speak, with water by means of continuous proctoclysis, supplemented by intravenous and subcutaneous saline solution at from eight to twelve hours, and water by mouth freely as soon as may be, are important, material measures that limit and prevent active, spreading peritonitis. When nausea or vomiting exists or continues, frequent gastric lavage is employed. The intensity of employment of these measures depends on the condition that confronts the surgeon. In all soiling or contamination of the abdomen in emergency or planned operative procedures, a potential peritonitis should be regarded as existing, and active treatment must be directed to counteract so dire a complication. Blood transfusion, early, is another valued addition to this treatment.

Through and through drainage, more readily possible in female than in male patients, is recognized as effective and desirable. In the male it would be a difficult procedure, with careful dissection, to avoid injury to vessels, prostate, bladder, ureter and rectum. In this case the avenue provided by the penetrating object enabled us to attain this desired drainage, thereby assisting the patient's recovery.

New and Nonofficial Remedies

FLUMERIN, THE DISODIUM SALT OF HYDROXYMERCURIFLUORESCEIN

Preliminary Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following statement on the experimental status of flumerin, the disodium salt of hydroxymercurifluorescein.

W. A. PUCKNER, Secretary.

A report on "Flumerin—A New Mercurial for the Intravenous Treatment of Syphilis," was read before the Section on Dermatology at the recent meeting of the American Medical Association by Edwin C. White, J. H. Hill, Joseph Earle Moore and Hugh H. Young. Flumerin is said to be the disodium salt of hydroxymercurifluorescein. The authors have requested the Council to consider flumerin with a view to its eventual admission to New and Nonofficial Remedies.

The Council considered the evidence presented in the report by Dr. White and his collaborators and recommended its publication in THE JOURNAL. In addition to the evidence presented in the paper, Dr. White supplied the Council with a specimen of flumerin, together with tests and standards for the identification and control of the product.

The A. M. A. Chemical Laboratory has made a preliminary examination of the product and of the chemical information furnished. It considers the evidence for the identity of the substance correct and the proposed tests for its identification and control acceptable.

The animal experiments reported by White, Hill, Moore and Young indicate that flumerin is less toxic than mercuric chlorid, mercuric benzoate, mercuric cyanid or mercuric succinimid and that it produces typical mercury effects when given intravenously to rabbits. The experiments indicate that the drug is effective in eradicating experimental syphilis in rabbits in doses that are well tolerated and which cause little or no injury to the kidneys of these animals.

The clinical trials carried out by White, Hill, Moore and Young appear to give proof of the value of flumerin as an antisyphilitic drug. In primary, secondary and tertiary syphilis, the therapeutic effects of the drug were shown to be the resolution of lesions and the abatement of positive blood Wassermann reactions. As the investigators caution: "The number of cases treated is sufficient to demonstrate that this mercurial is of value, but is too small to permit the allocation of the drug to a definite place in the therapy of syphilis." In consideration of the lack of clinical evidence, the investigators wisely announce: "It is not available for general distribution, and, for the present at least, permission will not be granted for its commercial manufacture."

The available evidence for the therapeutic value of flumerin is thus far limited to the report mentioned. Obviously, confirmation of the work there reported is necessary before more than a tentative acceptance can be accorded. However, flumerin is a definite chemical of nonsecret composition. This, together with the evidence presented in the publication referred to, may warrant its clinical trial in selected cases. Nevertheless, it is recognized that its therapeutic status is in the experimental stage.

The Council has deferred acceptance of flumerin for New and Nonofficial Remedies until proof has been furnished that the product is a useful addition to the list of mercury compounds for use in the treatment of syphilis, and until it is on the market.

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

ADRENALIN (See New and Nonofficial Remedies, 1922, p. 109).

The following dosage forms have been accepted:

Adrenalin Tablets No. 2.—Each contains adrenalin, 0.00033 Gm. (1/200 grain) as borate, yielding a 1: 1,000 solution when dissolved in 5 minims of water.

Hypodermic Tablets Adrenalin and Cocain Rx. B. (Cylindrical).—Each contains cocaine hydrochloride, 0.005 Gm. (1/12 grain) and adrenalin, 0.00005 gm. (1/1200 grain).

BROMETONE (See New and Nonofficial Remedies, 1922, p. 75).

The following dosage form has been accepted:

Brometone Capsules, 5 grains.

CORPUS LUTEUM-G. W. C. CO.—The fresh substance from the corpora lutea of the hog, dried, freed from fat, and powdered. It contains no diluent or preservative.

Actions and Uses.—See general article, Ovary (New and Nonofficial Remedies, 1922, p. 208).

Dosage.—From 0.065 to 0.3 Gm. (1 to 5 grains).

Manufactured by G. W. Carnrick Co., New York. No U. S. patent or trademark.

Tablets Corpus Luteum, G. W. C. Co., 2 grains.

Corpus Luteum-G. W. C. Co. is a yellowish powder, having a characteristic odor. It is partly soluble in water.

One part of desiccated corpus luteum-G. W. C. Co. represents approximately 5 parts of the fresh corpus luteum substance.

EPINEPHRINE (See New and Nonofficial Remedies, 1922, p. 108).

Epinephrin-Lederle.—A brand of epinephrine-N. N. R. made from the suprarenal glands. Sold in the form of the solution.

Manufactured by the Lederle Antitoxin Laboratories, New York City. No U. S. patent or trademark.

Solution Epinephrin-Lederle.—A solution containing epinephrine sulphite equivalent to 1 part epinephrine in 1,000 parts of physiological solution of sodium chloride, preserved by a small quantity of sulphurous acid and saturation with carbon dioxide. The epinephrine is isolated from the suprarenal glands of sheep or cattle. Solution epinephrin-Lederle is standardized colorimetrically by the method of Folin, Cannon and Denis (*J. Biol. Chem.* **13**: 179).

MERCURIC SUCCINIMIDE (See New and Nonofficial Remedies, 1922, p. 194).

The following dosage form has been accepted:

Hypodermic Tablets No. 50 Mercuric Succinimide Mulford, 0.012 Gm. (1/5 grain).

Prepared by H. K. Mulford Company, Philadelphia.

MERCURIALIZED SERUM-MULFORD (See New and Nonofficial Remedies, 1922, p. 189).

The following dosage form has been accepted:

Mercurialized Serum No. 2-Mulford.—For intraspinal use. Each package contains one 30 cubic centimeter double ended vial, containing the equivalent of 0.0026 Gm. (1/25 grain) of mercuric chloride in 30 Cc. of horse serum.

TUBERCULIN-KOCH (See New and Nonofficial Remedies, 1922, p. 293).

Parke, Davis & Company, Detroit.

Tuberculin (Old) and Control for the Pirquet Test.—Marketed in packages (*Bio. 530*) containing three sealed glass tubes of tuberculin, each tube containing tuberculin sufficient for one test, and three tubes of control material.

Tuberculin Ointment for the Moro Test.—Marketed in collapsible tubes (*Bio. 520*) containing 2 gm. of an ointment consisting of 50 per cent. of tuberculin-Koch and 50 per cent. of anhydrous wool fat.

Physiology and Pathology of the Blood of the New-Born.—A study of the blood of the new-born by Dr. José Martins Barbosa, a Portuguese anatomist, gave the following results: average of red cells in the first month of life, 6,160,000 per cubic millimeter; 6,562,000 among male infants and 5,224,000 among female; white cells average 14,526: 14,039, male, and 15,104, female; hemoglobin average (Fleischl and Sahli) 142 per cent.: 146 per cent., male, 139 per cent., female; average cell hemoglobin value, 1.17: 1.11, male, 1.21, female; proportion of white to red cells 1: 458: 1: 492, male, 1: 414, female; differential white cell count; neutrophil polymorphonuclear cells, 5,658, eosinophil polymorphonuclear cells, 256; mast cells, 24; large mononuclear and transition cells, 135, mononuclear cells, 2,240; lymphocytes, 6,213; small, 4,754, large, 1,459. Grand total per cubic millimeter 14,526. In the first month a number of anomalies having no pathologic significance may be observed in the white cells. The presence of erythroblasts in the first week, if not over 11 to 15 per cubic millimeter, should not be considered pathologic. Dr. Martins Barbosa used for dilution of red cells, a 0.75 per cent. sodium chlorid solution, which in his opinion is the best to preserve and examine the shape of red cells. For the white cell count the diluent was distilled water, 100 c.c., glacial acetic acid, 1 c.c. The blood was obtained from the plantar arteries.

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SATURDAY, SEPTEMBER 9, 1922

CURRENT ESTIMATES OF SUPRARENAL FUNCTION

It has become increasingly more difficult in recent years for the clinician to find his way through the tortuous maze of conflicting opinions regarding the functions and potency of epinephrin in the organism. The epoch-making discovery of Oliver and Schäfer in England a quarter of a century ago that extracts of the suprarenal glands have a powerful action as cardiovascular stimulants directed attention to this phenomenon, a truly remarkable manifestation of pharmacologic action, to the almost complete exclusion of other considerations of possible suprarenal function. The presumable untenability of the long-fostered belief that effective blood pressure and a stimulative influence on the sympathetic nervous system are maintained by continuous discharge of the active principle epinephrin into the circulation has repeatedly been referred to in THE JOURNAL.[1] In a similar category of undemonstrated beliefs belongs the conclusion that the profound asthenia attending destruction of the suprarenal tissues is due to a loss of epinephrin; for administration of the latter fails to become life-saving when the suprarenals are destroyed. The cortex is probably the indispensable part of the gland.

Other knotty points in present-day suprarenal physiology are also becoming disentangled. In a current review revealing critical judgment, Hoskins [2] has made it clear that there is today no justification for classifying epinephrin solely as a vasoconstrictor agent, as most clinicians are likely to do. It is either vasodilator or vasoconstrictor, depending on the amounts used, the organ affected and the conditions attending the administration, as regards body temperature, anesthesia, the action of deleterious factors such as anaphylaxis, and other eventualities. A failure to recognize the importance of such modifying factors, Hoskins remarks, accounts in part, perhaps, for the existing conflicts in the evidence regarding suprarenal pharmacology.

That suprarenal discharge exerts any significant effect on the circulation during the ordinary periods of routine existence seems unlikely in the face of the accumulated negative evidence. Whether, however, in times of special stress attended by emotional excitement the output of suprarenal secretion may not reach an "effective level" at which it can promote circulatory changes leading to an altered distribution of blood has been vigorously debated during the past decade. THE JOURNAL has attempted, from time to time, to reflect the convictions to which the growing evidence tended to direct the unbiased student—perhaps not always wisely. Progress dictates, therefore, that we refer to the latest conclusion of an energetic critic [2] who believes that, despite the ingenuity with which the data have been criticized, enough careful and concordant observations are now available to justify the conclusion that the suprarenal glands "are controlled by the central nervous system, and that they are stimulated to effective secretion, as would be expected, by such influences as affect other organs under sympathetic control." Thus, strong emotions, pain and asphyxia exert a physiologic effect. If the reaction postulated is indeed a fact, the epinephrin discharged under such stress can reinforce the sympathetic stimulation leading to a mass shifting of the blood from the "vegetative" organs to those involved in neuromuscular exertion. Such a redistribution must be of great advantage to the individual in times of need, as Cannon, the sponsor for the theory, has often pointed out.

1. Is Epinephrin Indispensable for the Organism? editorial, J. A. M. A. **69**: 40 (July 7) 1917; The Suprarenals and Shock, ibid. **69**: 729 (Sept. 1) 1917; Pituitary Functions, ibid. **69**: 1697 (Nov. 17) 1917; Emotional States and the Suprarenal Secretion, ibid. **70**: 94 (Jan. 12) 1918.

2. Hoskins, R. G.: The Relation of the Adrenals to the Circulation, Physiol. Rev. **2**: 343 (July) 1922.

PURIN SYNTHESIS IN MAN AND THE PRODUCTION OF URIC ACID

The employment of purin-free diets in the therapy of certain conditions in man—a procedure widely advocated only a few years ago both in this country and in Europe—was based on the assumption that the precursors of uric acid are not formed de novo in adult man. As uric acid is the end-product of the metabolism of the ordinary dietary purins, whether they are ingested preformed or as constituent complexes of nucleoproteins, the regulation of the production and output of uric acid was naturally supposed to be controllable by restriction of the intake of its immediate antecedents. In harmony with this it is observed that, in contrast with the quantities of uric acid eliminated in the urine on a mixed diet, the output during a liberal purin-free regimen is almost always lowered.

Students of nutrition have found it necessary, however, to reckon with the further fact that, despite the exclusion of all known antecedents of uric acid in the diet, the blood and urine are never entirely free from this product. Even during starvation, some uric acid circulates and is eliminated by the kidneys. In this instance it has been assumed that

the purin precursors arise from the disintegration of cellular tissues rich in nucleoproteins. How to account for the ever present minimum during an abundant but purin-free regimen has not been so easy. The known facts regarding this so-called endogenous uric acid have led to the assumption that even during adequate nutrition there is sufficient wear and tear of cellular organs to furnish more or less purins.

A recently reported experiment by Kollmann [1] will serve to reopen the question as to whether, after all, a synthetic production of purins may not occur in man as it surely does in some of the lower species. A healthy person so nourished as to gain 3.6 kg. (8 pounds) in body weight during a period of fifty days on a diet of known low purin content excreted 15 grams (½ ounce) more uric acid than could be accounted for by the food purin intake. How is this not inconsiderable elimination to be accounted for if not by actual synthesis from nonpurin substances? Such findings are not new in the literature of physiology, and they deserve to be recounted from time to time lest we become entirely converted to an hypothesis about the origin of uric acid that no one has adequately reconciled with the facts.

THE INORGANIC ELEMENTS IN THE BLOOD

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THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 9, 1922

CURRENT ESTIMATES OF SUPRARENAL FUNCTION

It has become increasingly more difficult in recent years for the clinician to find his way through the tortuous maze of conflicting opinions regarding the functions and potency of epinephrin in the organism. The epoch-making discovery of Oliver and Schäfer in England a quarter of a century ago that extracts of the suprarenal glands have a powerful action as cardiovascular stimulants directed attention to this phenomenon, a truly remarkable manifestation of pharmacologic action, to the almost complete exclusion of other considerations of possible suprarenal function. The presumable untenability of the long-fostered belief that effective blood pressure and a stimulative influence on the sympathetic nervous system are maintained by continuous discharge of the active principle epinephrin into the circulation has repeatedly been referred to in THE JOURNAL.[1] In a similar category of undemonstrated beliefs belongs the conclusion that the profound asthenia attending destruction of the suprarenal tissues is due to a loss of epinephrin; for administration of the latter fails to become life-saving when the suprarenals are destroyed. The cortex is probably the indispensable part of the gland.

Other knotty points in present-day suprarenal physiology are also becoming disentangled. In a current review revealing critical judgment, Hoskins[2] has made it clear that there is today no justification for classifying epinephrin solely as a vasoconstrictor agent, as most clinicians are likely to do. It is either vasodilator or vasoconstrictor, depending on the amounts used, the organ affected and the conditions attending the administration, as regards body temperature, anesthesia, the action of deleterious factors such as anaphylaxis, and other eventualities. A failure to recognize the importance of such modifying factors, Hoskins remarks, accounts in part, perhaps, for the existing conflicts in the evidence regarding suprarenal pharmacology.

1. Is Epinephrin Indispensable for the Organism? editorial, J. A. M. A. **69**: 40 (July 7) 1917; The Suprarenals and Shock, ibid. **69**: 729 (Sept. 1) 1917; Pituitary Functions, ibid. **69**: 1697 (Nov. 17) 1917; Emotional States and the Suprarenal Secretion, ibid. **70**: 94 (Jan. 12) 1918.

2. Hoskins, R. G.: The Relation of the Adrenals to the Circulation, Physiol. Rev. **2**: 343 (July) 1922.

That suprarenal discharge exerts any significant effect on the circulation during the ordinary periods of routine existence seems unlikely in the face of the accumulated negative evidence. Whether, however, in times of special stress attended by emotional excitement the output of suprarenal secretion may not reach an "effective level" at which it can promote circulatory changes leading to an altered distribution of blood has been vigorously debated during the past decade. THE JOURNAL has attempted, from time to time, to reflect the convictions to which the growing evidence tended to direct the unbiased student—perhaps not always wisely. Progress dictates, therefore, that we refer to the latest conclusion of an energetic critic[2] who believes that, despite the ingenuity with which the data have been criticized, enough careful and concordant observations are now available to justify the conclusion that the suprarenal glands "are controlled by the central nervous system, and that they are stimulated to effective secretion, as would be expected, by such influences as affect other organs under sympathetic control." Thus, strong emotions, pain and asphyxia exert a physiologic effect. If the reaction postulated is indeed a fact, the epinephrin discharged under such stress can reinforce the sympathetic stimulation leading to a mass shifting of the blood from the "vegetative" organs to those involved in neuromuscular exertion. Such a redistribution must be of great advantage to the individual in times of need, as Cannon, the sponsor for the theory, has often pointed out.

PURIN SYNTHESIS IN MAN AND THE PRODUCTION OF URIC ACID

The employment of purin-free diets in the therapy of certain conditions in man—a procedure widely advocated only a few years ago both in this country and in Europe—was based on the assumption that the precursors of uric acid are not formed de novo in adult man. As uric acid is the end-product of the metabolism of the ordinary dietary purins, whether they are ingested preformed or as constituent complexes of nucleoproteins, the regulation of the production and output of uric acid was naturally supposed to be controllable by restriction of the intake of its immediate antecedents. In harmony with this it is observed that, in contrast with the quantities of uric acid eliminated in the urine on a mixed diet, the output during a liberal purin-free regimen is almost always lowered.

Students of nutrition have found it necessary, however, to reckon with the further fact that, despite the exclusion of all known antecedents of uric acid in the diet, the blood and urine are never entirely free from this product. Even during starvation, some uric acid circulates and is eliminated by the kidneys. In this instance it has been assumed that

the purin precursors arise from the disintegration of cellular tissues rich in nucleoproteins. How to account for the ever present minimum during an abundant but purin-free regimen has not been so easy. The known facts regarding this so-called endogenous uric acid have led to the assumption that even during adequate nutrition there is sufficient wear and tear of cellular organs to furnish more or less purins.

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diet and not due to starvation for vitamin A should serve to keep investigators alert to the problems of salt effects in the organism.

Current Comment

ALEXANDER RIGHTER CRAIG

The sudden passing of Dr. Craig is a shock that makes it difficult of realization. On August 25 he left for his annual vacation, and was spending it with his family in rural Maryland. For some weeks he had not been feeling altogether well, although he treated the matter lightly, and jokingly rejected the suggestion that it was time for him to take his vacation. Finally he got away and then, out of a clear sky, came the telegram telling of his death. The rank and file of the profession probably will never know the loss which it sustains in Dr. Craig's going. It is doubtful whether the impress he has left on the American Medical Association ever will be fully realized, except by the few who have been intimately associated with him. He was so unassuming, so modest, so free from any arrogant or dictatorial spirit, that his far-reaching influence made itself known rather by end-results than by his efforts to bring about those results. Especially valuable were his counsel and advice in the various difficult problems that would come up in matters affecting the organization. To a degree far beyond the average man he was able to see the point of view of the other fellow and, by virtue of his desire to do to others as he would be done by, frequently brought harmony out of what bade fair to be discord. He not only filled the position of Secretary of the Association, but also was the secretary and executive officer of the Council on Scientific Assembly and of the Judicial Council. In the latter position particularly his exceptional tact showed itself. By his associates at the headquarters office, Dr. Craig was loved for his gentleness and unfailing courtesy. In all the years that he was with the Association, he was never known to make an unkind criticism of those with whom he was thrown in daily contact—subordinate or equal. Criticize, he could and would, when in his opinion principles were at stake, but always in a spirit of helpfulness and service. A rare type of man he was; a re-creation of the spirit of service; a giver of himself; a man whose life was a mission; "we shall not soon see his like again."

THE STATUS OF ARTERIOSCLEROSIS

Arteriosclerosis is one of those expressions which we at times use so glibly that the untutored person is likely to be profoundly impressed by its presumable medical import. Sometimes other terms, such as atheroma, atherosclerosis or endarteritis deformans, are applied to the same affection of the arteries, characterized most conspicuously by thickening of the wall accompanied by degenerative changes such as fat deposits. Arteriosclerosis is occasionally a sort of password thanks to which an open pathway is secured out of the uncertainties of diagnosis. It may come as a surprise, therefore, to those accustomed to deal with arteriosclerosis as a serious entity to learn how uncertain still is our knowledge of its cause and even of its predominant anatomic features. In fact, a pathologist familiar with the subject has not hesitated to state [1] that apart from the conflicting studies of a few investigators, one is impressed by the feeling that most of what is written has only the value of opinion, and that we are extraordinarily ignorant with respect to this common affection. Diametrically opposite views, he adds, are put forward as to the causes, the anatomic nature and the effects of arteriosclerosis; many names of different significance are proposed for it and, withal, there has been no unanimity of opinion as to what should be included under this heading and what excluded. In the debate as to whether the lesions of the media are primary or secondary in the pathologic changes of the arterial wall, MacCallum [1] inclines to accept the paramount importance of the intimal changes. With respect to the latter he emphasizes the presence of lipoid substances followed by a great hyperplasia of the connective tissue and to a less extent of the elastic tissue. Despite the varied experimental efforts to affect the blood vessels adversely, in ways resembling the lesions of arteriosclerosis, by mechanical means through elevation of arterial pressure or otherwise, no success has followed this procedure alone. Only when additional toxic or dietary factors are introduced does the production of experimental arteriosclerosis seem likely at present. Here is a great opportunity for thorough investigation.

GELATIN AS A FOOD

Although gelatin enjoys a widespread popularity as a dietary article, and has found much favor in recent times in the feeding of the sick, few persons who partake of this protein substance realize that it is, in a sense, an artificial product. Gelatin is produced by mild hydrolysis from the organic basis of certain connective tissues which are collagenous in nature. Thus, by simple chemical means, less readily digestible materials which are essentially wastes or by-products of the meat industry are rendered more available for culinary and dietetic use in a form easily utilized in alimentation. Opinion as to the real food value of gelatin has vacillated between wide extremes. In the days of the French physiologist Magendie, early in the last century, a commission of the Paris Academy of Sciences regarded the product as having no food value by itself, and as reducing the value of other foodstuffs fed in combination with it. Although all investigators of the modern era admit that gelatin alone cannot satisfy the entire nitrogenous needs of the body as other proteins may, they usually teach that a considerable proportion of this requirement

1. MacCallum, W. G.: Arteriosclerosis, Physiol. Rev. 2:70 (Jan.) 1922.

can be supplied without detriment by the connective tissue derivative. The failure of gelatin to equal the proteins of meat, milk or eggs, for example, in their "biologic" or nutrient value is today understood to be due to the "incomplete" character of the protein; that is, gelatin lacks in its chemical make-up certain amino-acid groups, notably tyrosin, tryptophan and cystin, which are indispensable in the diet because they cannot be synthesized de novo in the animal organism, yet play an important part in metabolism. These amino acids are normally derived from the dietary proteins; hence a shortage ensues when gelatin is the sole food protein. There is no contradiction to the well established fact that gelatin is a food in the same sense that sugar or fats furnish energy to the body. The distinctions which Liebig and his contemporaries made between "respiratory" and "plastic" foods cannot be maintained in their original interpretation. But the observations of Robison [1] at the Lister Institute in London leave the impression that gelatin can at best satisfy only a very minor part of the specific nitrogen needs of the body in man. The dietetic use of gelatin need not be abandoned because we have learned the truth with respect to what it can and cannot accomplish physiologically.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALASKA

Hospital at Nome.—A bill reported in the Senate by the Committee on Public Buildings and Grounds, recently, transfers the Detention Hospital at Nome to the U. S. Bureau of Education.

ARKANSAS

New Board of Health.—Dr. George S. Brown has been appointed chairman and Dr. Isaac N. McCollum, city health officer, on the board of health of Conway.

CALIFORNIA

"Drugless Healers" Refused Narcotic Permits.—Collector of Internal Revenue John P. McLaughlin announced, June 25, according to the Oroville (Calif.) *Mercury*, that so-called drugless physicians, including chiropractors, osteopaths, etc., will not be permitted to register for narcotic permits under the Harrison Narcotic Law. Under McLaughlin's ruling, only regular physicians and surgeons who are licensed to practice in California are entitled to the use of narcotics.

Rockefeller Foundation Donation.—Proposal of the Rockefeller Foundation, through Dr. Platt W. Covington, state director of the international health board of the foundation, to donate the sum of $5,000 yearly for three years toward establishing a laboratory in San Bernardino County for research work, has met with approval from the county physicians. A condition is made that the county provide a like sum for the three-year period and furnish the laboratory and an experienced physician and chemist to be placed in charge of the work. San Bernardino is one of three counties in the state to receive the offer. The object of the proposal is to better health conditions and provide means for lowering the heavy death rate.

1. Robison, R.: The Value of Gelatin in Relation to the Nitrogen Requirements of Man, Biochem. J. **16**: 111, 1922.

COLORADO

Personal.—Dr. David H. Winternitz, Colorado Springs, has been appointed county physician of El Paso County to succeed Dr. Albert H. Peters, who died recently.

CONNECTICUT

Hospital Contract Awarded.—The Eastern Engineering and Construction Company of Bridgeport has been awarded the contract for the New Britain General Hospital to be erected at New Britain. The cost of construction will be about $350,000.

DISTRICT OF COLUMBIA

Personal.—Dr. Robert W. Shufeldt, Washington, major, M. C., U. S. Army, retired, has accepted the position of lecturer on art anatomy and zoology on the faculty of the Research University of that city. He will also give a course of lectures at the Catholic University of America on the "Essentials of Natural Science."

FLORIDA

Hospital News.—The contract has been awarded for the administration building of the new tuberculosis hospital for Jacksonville, it is announced. Only the first unit will be erected at present at a cost of $137,000. It will be a three-story fireproof building, the wings of which will contain twenty-five beds each.——A committee of the Polk County Medical Association is in charge of plans for a county hospital.

Petition for Langley Bill.—The board of trade has sent the following resolution to members of Congress from Florida and to the department headquarters of the American Legion:

WHEREAS, It has been called to the attention of this organization by representatives of the American Legion that certain obstacles are being put in the way which are delaying operation of the Langley bill, which provides for the construction of government hospitals for the care of disabled veterans of the World War; and

WHEREAS, It has been brought to our attention that Brigadier General Sawyer, chairman of the hospital board of the U. S. Army, appears to be largely responsible for the delay in carrying out the provisions of the Langley bill; therefore, be it

Resolved, That this organization, representing the city, adopts these resolutions urging General Sawyer to refrain from further opposition to the carrying out of the Langley bill, and further urging General Sawyer to endeavor to have the provisions of this bill carried out as early as possible.

GEORGIA

Government Hospital Under Construction.—Construction work on the Lenwood Hospital is nearing completion, it is announced. The institution calls for an expenditure of $400,000, and will be completed, it is stated, by September 15. The seven buildings under construction are of stucco and reinforced concrete. Patients will be housed in five of the buildings, in addition to the main building. The sixth building will be used as dining room and kitchen, and the seventh as a power house.

ILLINOIS

Nursing School at State Institution.—A nurses' training school will be opened, September 15, at the Lincoln State School and Colony at Lincoln.

Clinic for Cripples.—A free clinic was held in St. Mary's Hospital, East St. Louis, August 25, under the auspices of the Visiting Nurses' Association.

Personal.—Dr. E. P. Sloan, Bloomington, president of the Illinois State Medical Society, addressed the Madison County Medical Society at Edwardsville, September 1. The subject of his lecture was "Goiter."

Hospital Superintendent Resigns.—Mrs. Bertha Logan has resigned as superintendent of the La Salle County Tuberculosis Sanitarium at Ottawa, in order to devote a year to travel. The resignation will be effective October 1. Her successor has not yet been appointed.

Physician Shot by Bandit.—In an unsuccessful attempt of four bandits to rob the Forreston postoffice, August 30, Dr. Walter W. Overfield, president of the Forreston Commercial State Bank, was shot and perhaps fatally wounded. The robbers escaped. Dr. Overfield was leaving his office when he heard the nitroglycerin explosion. With two other men, he ran toward the postoffice, and the bandits fired at them through the windows.

Ordinance Governing Weeds.—A determined effort is being made by the city health authorities of Galesburg to abate the

weed nuisance. The city council is endeavoring to have an ordinance covering the cutting of weeds enforced. Any person allowing weeds, such as jimson, burdock, ragweeds, thistles, cocklebur or other weeds of like kind to grow on his premises will be subject to a fine of not less than $3 or more than $20. This ordinance is declared urgent and necessary for the preservation of the public health.

Tuberculosis Conference.—The regional conference on tuberculosis and public health will be held in Springfield, September 11-12, under the auspices of the Illinois Tuberculosis Association, forty-one counties of the southern section of the state participating. Dr. George T. Palmer, president of the state association, will discuss "The Broadening Program of Tuberculosis Work," and Philip P. Jacobs, Ph.D., editor of the *Journal of Outdoor Life*, New York, will give an address.

Chicago

Personal.—Drs. William Allen Pusey, Edward H. Ochsner, Clarence W. Hopkins and Robert H. Babcock, were among the speakers at the annual meeting of the State Medical Society of Wisconsin at Green Lake, recently.

Rumor that "Dead" Physician Is Alive.—Repeated reports that Dr. J. Newton Roe, convicted on violation of the federal prohibition law, who disappeared in March, 1921, is alive and has been seen in South America are appearing in the press. Dr. Roe was under sentence to serve eighteen months in the Atlanta penitentiary at the time of his supposed death. It is reported that his supposed body was obtained from a medical school. The body was disinterred, but positive identification was impossible owing to the length of time since death.

INDIANA

Violations of Health Laws.—The health board of Gary recently filed forty-seven prosecutions for violations of health laws, in one day. All of these prosecutions were successful, and fines were applied in each case. They were chiefly for insanitary conditions in the distribution of food and milk.

KANSAS

Public Health Nursing.—At the annual meeting of the state board of health a new division of public health nursing was created with Miss Hulda Cron as chief.

KENTUCKY

University Head Dies.—James Kennedy Patterson, Ph.D., aged 89, president emeritus of the State University of Kentucky, Lexington, of which he was first head, died, August 15, at his home on the university campus. Professor Patterson served as dean of the university from 1869 until 1910.

Memorial Issue of Medical Journal.—An early issue of the *Kentucky State Medical Journal* will be published as a memorial to the life and work of the late Joseph N. McCormack. The publication of this issue will be under the direction of his life-long friend and associate, Dr. Lewis S. McMurtry, president of the Kentucky State Board of Health.

Mental Survey.—At a meeting of the National Committee for Mental Hygiene, held in the State Board of Health Building, Louisville, plans for conducting the mental survey of the state, authorized by the last general assembly, were made. The purpose of the survey is to determine the deficiencies of prisoners in the state penal institutions and the mentality of the schoolchildren, in order that steps may be taken to reduce the number of criminals and defectives in the next generation. Dr. Frank O'Brien, secretary of the Louisville Society for Mental Hygiene, was elected executive secretary of the advisory committee, and Drs. A. T. McCormack, Louisville, and C. P. Sprague, Lexington, are other members of the committee. It was decided that the national committee's six experts shall arrive in Kentucky early in the autumn to start work at the penitentiary at Frankfort. Finally, there will be an investigation in ten selected counties to discover the causes of absence among schoolchildren and the reasons for their failure to earn promotion.

LOUISIANA

Physician to Aid Belgians.—Dr. Sanders L. Christian, U. S. Public Health Service, Shreveport, has sailed for Antwerp, Belgium, where he will aid the United States consul in promoting better health conditions in that country.

MAINE

Public Health Courses.—The University of Maine, Orono, and Bates College, Lewiston, have established courses in public health, at their summer schools.

Medical School Is Sold.—The Medical School of Maine (Bowdoin Medical School), Portland, has been sold, together with the land on Chadwick Street, for $30,000. It is expected that an apartment building will be erected on the site.

MARYLAND

Hospital Contract Awarded.—The contract for the municipal hospital for communicable diseases in Baltimore, to be located at Montebello, has been awarded, at a bid of $658,600. It has been decided to eliminate at present Pavilions A and C, to avoid running the cost of the hospital up to $1,000,000 or $300,000 in excess of the loan. These pavilions will be built later. The building to be erected will be of light colored brick with green tile roof.

School Dietitian to Be Appointed.—Dr. C. Hampson Jones, commissioner of health, Baltimore, has been authorized to appoint a woman dietitian to the public school health work staff, to enable the department to look after children who are undernourished. The chief work of the new employee will be to instruct the 100 school nurses in dietetics, the nurse in turn to carry the information into the homes of children found to be under weight from disease or malnutrition.

Improvements to Marine Hospital Planned.—Plans to reopen the U. S. Marine Hospital, Baltimore, with enlarged facilities, are being made, following a recent appropriation of $20,000 by Congress. Improvements will consist of new heating apparatus and mess rooms and enlargement of the hospital capacity to about 230 beds. The hospital will be directed by Major M. H. Foster, formerly in charge of the Fort McHenry Hospital. The hospital is open to patients from the U. S. Coast Guard, naval service and merchant marine, and to disabled federal employees and foreign seamen. At present, such patients are being treated at the Morrow, Mercy and University hospitals in Baltimore.

University of Maryland Alumni Association Planned.—Plans are being made to form an alumni association of the new University of Maryland. This will include graduates of the Baltimore Medical College, College of Physicians and Surgeons, and the University of Maryland Medical School, now merged into the University of Maryland. The aim is to form an executive body composed of members of these former schools, who will interest themselves in the working of the medical department and for the building up of the university. In charge of the alumni association are Dr. G. Milton Linthicum, president; Drs. Jacob Guy Steele and Charles Bagley, Jr., vice presidents, and Dr. William S. Love, recording secretary.

MASSACHUSETTS

Public Health News.—The legislature has authorized a division of mental hygiene in the state department of mental diseases.——Through its division of hygiene, the department of public health will extend its maternity and infant hygiene service. The first feature of the new program will be an investigation of the causes of maternal and early infant deaths during the last year in Massachusetts. Two physicians have been added to the staff, as well as a vital statistician, to carry on the work. A supervisor and a staff of five nurses will soon be added to the division, whose main purpose will be to stimulate prenatal and infant care by the extension of public health nursing into regions not reached, by helping to raise standards of work already under way. Educational methods demonstrating to the public the value of prenatal maternal and early infant care will also be illustrated.

MICHIGAN

John Sanford Dies.—Mr. John P. Sanford, for four years law enforcement officer of the venereal disease bureau of the department of health, died recently from heart disease.

Health Educational Exhibit.—At the Michigan State Fair, a health exhibit will be established by the Detroit Tuberculosis Society, it has been announced by the secretary of the society. A cartoonist will draw large colored cartoons illustrating health rules. A trained dietitian will be in attendance. Health moving pictures will be shown every evening.

Health Institutes.—Since the announcement by Dr. R. M. Olin, recently, of the consolidation of the clinic divisions and the lecture, moving picture and exhibit units of the state board of health, the bureau of education has arranged a schedule and prepared a fall program. The first health institute was opened in Berrien County this week and will continue until September 16.

MINNESOTA

County Medical Meeting.—At the annual meeting of the Stearns-Benton Medical Society, Dr. Tolbert Watson, Albany, was elected president, and Dr. John N. Libert, St. Cloud, secretary-treasurer.

Appointment Approved.—The appointment of Dr. Delos J. Bristol of Harvard University to head the department of public health and preventive medicine recently created at the University of Minnesota has been approved by the board of regents. Professor Bristol taught at the state university from 1908 to 1912, and was medical director of the St. Paul Anti-tuberculosis Dispensary from 1910 to 1912.

Registration of Students in Minnesota.—Instead of only eight students out of 250 being able to secure admission to the medical school of the University of Minnesota as reported last week, it is now reported that 100 out of 197 applicants will be able to secure admission. A statement has been published to the effect that the "double shift" would be very expensive and lead to much confusion. Instead of the double shift, therefore, it is stated that the laboratory buildings of anatomy and physiology will be enlarged and the capacity of the university hospital increased, so as to provide for larger numbers of students.

Public Health Exhibit at State Fair.—For the third year, a public health exhibition was presented at the Minnesota State Fair, held in the Twin Cities, September 2-9. Education of both parents and children in child hygiene was largely emphasized, and a prize of $500 was given for healthful mouths and good teeth. Entertainments by a "toothbrush man," to impart lessons in oral hygiene, and health plays were also given. The need of legislation for higher standards of nursing education was emphasized in the exhibit of the Minnesota State League for Nursing Education. Organizations participating in the exhibits and entertainments of the health exhibition building were the Northwest Pediatric Society, the American Red Cross, the Minnesota State Board of Health, the Minnesota Public Health Association, the state dental association, the state sanatorium advisory commission, the state league of nursing education, the Twin City Industrial Nurses, the Minneapolis Health Department, the Hennepin County Public Health Association, the Minneapolis Infant Welfare Society, the St. Paul Baby Welfare Society, the Ramsey County Public Health Association and the Hennepin County Rural Public Health Nurses.

MISSISSIPPI

New Health Unit.—The Jackson County health unit, for which the board of supervisors made an appropriation last spring, will be organized this month. Dr. May F. Jones, Sanatorium, has been sent to Pascagoula by the state board of health to organize the unit.

NEBRASKA

School Health to Be Taught.—Special courses have been prepared for each grade in the public schools of Omaha, and two periods a week will be given in health instruction for the pupils. The work will start in the first grade, with emphasis on personal cleanliness, washing the face, teeth, etc., until in the eighth grade the pupils will study sanitation, precautions against disease and public control of health.

NEW HAMPSHIRE

Campaign for Better Health.—The Merrimack County Medical Association recently went on record as advocating a clinical examination of presumably well people twice yearly. Physicians of the county will conduct an intensive campaign to promote better health. A resolution was also passed on the desirability of treating tuberculous patients at general and municipal hospitals, providing separate wards be maintained for this purpose.

NEW MEXICO

Personal.—Dr. LeRoy S. Peters, Albuquerque, has been appointed to the state board of public welfare to succeed the late Dr. Abraham G. Shortle.

NEW YORK

Medical School Making Progress.—The Medical School of the University of Rochester is slowly making progress. A research laboratory will be completed in about three months. An affiliation is being brought about between the city authorities and the university for the building of a municipal hospital on or near the university campus, and, in accordance with the arrangements, the university medical school will furnish the professional training and nursing staffs, and the medical teaching will be carried on in the hospital. Walter R. Bloor, Ph.D., of the University of California Medical School has accepted the chair of biochemistry, and will begin his duties this fall. Dr. George W. Corner, now at Johns Hopkins University, is to be the professor of anatomy. He will assume his duties at Rochester early in 1924. Dr. Nathaniel W. Faxon, now of the Massachusetts General Hospital, will assume the position of director of the University Hospital, Oct. 15, 1922. The school will be ready to receive students in the fall of 1924 or 1925.

New York City

Personal.—Dr. Emanuel Libman has recently returned from Europe, where he was called to attend the late Lord Northcliffe, English publisher.——Dr. Joseph Eastman Sheehan sailed for Liverpool, September 1. Dr. Sheehan is the American representative to the International Clinic of Plastic Surgery, which meets in London, September 15.——Dr. Pasquale A. della Badia has returned from a trip to Rome.

Meatless Diet in Hospital.—An experiment in meatless diet is being tried in the Beth Israel Hospital by Superintendent Frank. Until recently, it was contended that meat was the source of vitamins, but this has been refuted by Prof. E. V. McCollum, professor of chemistry and hygiene at Johns Hopkins University, Baltimore. From a medical standpoint, it is now asserted that there is nothing inherent in meat that cannot be supplied by fish, milk, eggs and milk products.

Warning Against Typhus.—Health Commissioner Copeland returned, August 26, from a tour of France, Germany and Poland, where he went to study health conditions. He considers that the world today faces an eminent health peril. He prophesies that Poland will be swept by typhus this winter and that if it is not drained and cleaned the whole world will suffer. The commissioner will ask public spirited citizens of this city for $100,000 for a temporary hospital to care for typhus patients going from Russia to Poland.

Amendments to the Sanitary Code.—At a meeting of the Board of Health of New York, August 10, the following amendments to the sanitary code were adopted:

Section 201. Precautions to be observed by physicians, nurses, midwives or other attendants for the prevention of ophthalmia neonatorum in the eyes of all new-born children: It shall be the duty of every physician, nurse, midwife or other person in attendance on a confinement case, to instill in the eyes of the new-born child, immediately after delivery and before the expulsion of the after-birth, a 1 per cent. solution of nitrate of silver or an equally effective agent, in order to prevent the development of ophthalmia neonatorum in the eyes of all new-born children.

Section 39. The manager or superintendent of any public or private hospital wherein a mortuary is not maintained for the temporary retention of the remains of persons deceased therein, shall forthwith permit the removal of the remains of such deceased persons on presentation by an undertaker of a removal permit duly issued by the department of health.

NORTH CAROLINA

County Health Lectures.—A health campaign has been conducted for several weeks in Lenoir County. Physicians and dentists have delivered health lectures at various points in the county every Thursday night. These lectures will be continued through September.

Physician Escapes Prison.—It is reported that Dr. James W. Peacock, Thomasville, who has been confined in the department of the criminal insane at the state prison, Raleigh, since his acquittal of the killing of Chief of Police Taylor, escaped, August 30, by sliding down a rope from his cell on the third floor.

Committee on Medical School.—Dr. John W. Long, Greensboro, president of the Medical Society of the State of North Carolina, has appointed a committee of thirty members of the society to take action as they may see fit on the proposed plans for a four-year medical school to be established by the University of North Carolina. Dr. I. W. Faison, Charlotte, has been named chairman of the committee. The trustees of the university recommended that the school be located at Chapel Hill, but the committee will meet some time in the fall to investigate and make recommendations in the matter.

OHIO

Academy of Medicine of Cleveland.—The first fall meeting of the academy will be held, September 15. Dr. John M. T. Finney, professor of clinical surgery, Johns Hopkins Univer-

sity, Baltimore, and Dr. Mose E. Blahd, Mount Sinai Hospital, Cleveland, will be the speakers of the evening.

Nonlicensed Practitioners Fined.—Three of five persons arrested recently at Youngstown on charge of practicing medicine without licenses admitted their violations. George Fink and C. A. Stone were fined $100 and costs each, and P. B. Derr, $100, on condition that he refund $70 collected from a patient.

Dr. Biskind Appointed Government Surgeon.—Dr. Israel J. Biskind, formerly of Cleveland, personal physician to Sir Herbert Samuel, high commissioner for Palestine, has been appointed consulting surgeon to the government of Palestine, it was recently announced. Dr. Biskind is a graduate of the Cleveland College of Physicians and Surgeons, class of 1899, and practiced in Cleveland for twenty years.

Personal.—Dr. Russell D. Bussdiker, following three years' service with the medical department of the U. S. Navy, returned to his home in Dayton in July. In August he left for Kermanshah, Persia, where he will have charge of a hospital in connection with the foreign mission of the Presbyterian Church.——Dr. J. Fred Wuist, Dayton, has been appointed a member of the board of medical examination and registration to succeed Dr. Sylvester M. Sherman of Columbus.

Stolen Narcotic Forms.—In a recent regulation issued from the office of the Commissioner of Internal Revenue, methods for reporting stolen or lost order forms for narcotics have been altered. If used or unused forms are stolen from or lost by persons registered under the provisions of the Harrison Narcotic Law, a report of the same, stating the serial numbers, is to be forwarded to the Commissioner of Internal Revenue, Washington, D. C. If the theft, or loss, however, includes an entire book and the serial number is unknown, then the report is to be submitted to the Collector of Internal Revenue from whom the purchase was made.

Action Taken Over Vaccination Opposition.—Dr. Clayton W. Shaw, Alexandria, president of the Campbell County Board of Health, was in Dayton, August 21, to make an investigation of the printed matter and posters circulated by the Northern Kentucky Medical Liberty Association, opposing vaccination in the public schools. After a conference with Dr. George R. Aiken, city health officer of Dayton, Dr. Shaw called a meeting of the county board of health to take action in the matter. It was stated that the law, which requires parents of schoolchildren to have them vaccinated, unless recent certificates of vaccination can be shown, will be enforced.

OKLAHOMA

Personal.—Dr. John C. Hubbard, who for several years served in the federal health department as quarantine physician at Cristobal, Canal Zone, has returned to the United States and will locate at Oklahoma City.

PENNSYLVANIA

Health Inspection of Fair Stands.—The state health department, through the division of restaurant hygiene, will insist that all persons handling food at country and local fairs undergo a physical examination and furnish health officers' certificates stating that they are free from contagious diseases. Seventy-two fairs, having 2,300 refreshment stands, were covered by the inspectors last summer. Several persons were refused certificates, and their stands closed.

Crawford County Medical Society Meeting.—A regular meeting of the Crawford County Medical Society was held, June 7, in the Market House as a part of the child welfare program. A public meeting was held in the evening in the same place. Dr. Flood addressed the society, his subject being "The Milk Problem and Infant Feeding." The annual outing of the Crawford County Medical Society was held, Wednesday, July 12, at the Meadville Country Club.

Camp for Malnourished Children.—A camp for 200 undernourished children, taken from the rural districts of the state, was opened this summer on the grounds of the state sanatorium, Hamburg. The children were fed and given exercises and rest periods, until they were in normal physical condition for attendance at the fall school term. More than 600 applications were received from physicians, nurses and school teachers, requesting that undernourished children under their care might be admitted to the camp.

Health Boards Combine for Enforcement of Laws.—Members of local boards of health throughout the state have banded together in groups comprised of several counties. Permanent organizations for a uniform enforcement of state health laws and regulations have been effected, officers elected and constitutions adopted. Members of the state health department attend their meetings for the purpose of answering questions which may arise regarding health law administration, and to show how these laws can and should be enforced by the local authorities.

Philadelphia

Jurors Condemn Indigents' Home.—Conditions at the Home for the Indigents at Byberry, characterized as cheerless and insanitary, were reported by the grand jury to Judge Monaghan at the close of its term in the Quarter Sessions Court. The Home for the Indigents was found in very bad condition owing mainly to our county authorities' failing to supply money to repair or keep it in a sanitary condition. The city maintains 724 male and 344 female inmates in the home. The House of Correction was found to be in better condition than the Home for Indigents. The census reported 322 males and 117 female inmates.

Mental Affliction Held as Illness.—Presiding in the municipal court, August 30, Judge Brown decided a question that had long been the subject of a controversy between the department of public health and the department of welfare. The question involved the responsibility for the care of mentally afflicted, dependent children, pending their admission to an institution at Spring City, which at the present time is so crowded that there is no further room for patients committed there by the juvenile court. In deciding the question, Judge Brown contended that a person who is afflicted mentally is just as ill as one who is suffering from an affliction of the body, and for that reason he declared that the responsibility should be borne by the department of public health.

University of Pennsylvania News.—Changes in the faculty of medicine of the University of Pennsylvania, some of which have been previously announced in THE JOURNAL, are as follows: Dr. Charles H. Frazier, John Rhea Barton professor of surgery, to succeed Dr. Deaver; David Wright Wilson, Ph.D., to succeed Drs. Marshall and Taylor, the Benjamin Rush professorship of physiologic chemistry and of chemistry and toxicology having been combined. Dr. Hendrixson, assistant professor of physiologic chemistry for several years, has accepted the position of professor of physiologic chemistry at the University of Texas. Three years of college work will be required for admission next year; the following year, 1924, only college graduates or seniors "in absentia" will be admitted.

SOUTH CAROLINA

Health Board News.—Dr. Charles H. E. Esdorn has resigned as chairman of the board of health of Waterboro. ——Dr. Percy Brigham has resigned as health commissioner of Orangeburg and has been appointed city health commissioner of Florence to succeed Dr. Clarence C. Craft, who resigned recently.

Seaboard Plans Health Program.—Arrangements have been completed with the U. S. Public Health Service, the State Board of Health of South Carolina and the Seaboard Air Line Railway for an extensive survey, by a sanitary engineer, of the lands connected with that railroad in South Carolina, with a view to extensive health control along the entire line, it was announced by the state board of health in Columbia, July 12. Beginning at Andrews, the malaria survey will be continued to the Savannah River line, and thence to Jacksonville, Fla.

TENNESSEE

Colored Baby Clinic.—A colored baby clinic was recently held at Clarksville. Of all the children examined, nine averaged 23 per cent. underweight, and no children were more than 10 per cent. overweight. These babies will be visited in their homes by the nurses of the Montgomery County health unit, and efforts will be made to bring those underweight up to normal. Future clinics will be held to note changes in the general condition of the children.

TEXAS

Pathologist Appointed.—Dr. Frank W. Hartman, Temple, chief pathologist at the Temple Sanatorium for the last three years, has been appointed chief pathologist at the Detroit City Hospital, Detroit.

Personal.—Dr. Marcus P. Smartt, Manor, has resigned as a member of the state board of health, to become director of

the bureau of communicable diseases in the department of health.——Dr. Robert H. Looney, Waxahachie and Dr. William F. Holland, Santa Anna, have been appointed members of the state board of health by Governor Neff, to succeed Dr. Dickson G. Thompson, and Dr. M. P. Smartt.

UTAH

Child Hygiene Work to Be Continued.—The bureau of child hygiene of the state board of health will continue activities during the month with the establishment of clinics at Tremonton and other towns in Boxelder County. These clinics are conducted with the aid of the U. S. Public Health Service, under the Sheppard-Towner Act. The government has made available funds for the purpose of carrying on further activities in the bureau of child hygiene and has made possible the employment of additional personnel on the state health board.

VIRGINIA

Personal.—Dr. Micajah Boland, formerly of the Naval Training Station, Hampton Roads, has been appointed medical director of the Gendarmerie d'Haiti, with the rank of colonel, with headquarters at Port au Prince, Haiti.

Nurses Have Police Power.—An amendment was recently made to the city ordinances of Richmond to extend police powers to certain employees of the health department, so as to include nurses connected with the bureau of health. In accordance with this ruling, twelve nurses and the chief nurse of the health bureau were recently sworn in with police powers.

WEST VIRGINIA

College Alumni Organized.—At a recent meeting of the Fayette and Raleigh County societies at Beckley, the alumni of the Medical College of Virginia who were present organized the Alumni Society of the Medical College of Virginia in Southern West Virginia. Dr. John E. Cannaday, Charleston, was elected president, and Dr. Walter E. Vest, Huntingdon, secretary.

Physicians' Automobile Emblems.—The chief of police of Huntingdon has requested all Huntingdon physicians, through the Cabell County Medical Society, to display on the radiators of their cars the official automobile emblem of the American Medical Association. This is in line with action recently taken by the police departments of a number of other cities.

WISCONSIN

Personal.—Dr. Fred E. Tryon has been appointed health officer of Baraboo.——Dr. Benjamin H. Schlomovitz, director of the department of physiology and pharmacology, Marquette University School of Medicine, has resigned to become director of the laboratories of the National Soldiers' Home Hospital, under construction in Milwaukee.——Dr. Frederick V. Watson and Dr. George W. Moore, both of Antigo, have left for Los Angeles with their families and will make their future homes in that city.——Miss Adda Eldredge, Madison, was elected president of the American Nurses' Association at the recent conference in Seattle.

Health Training in Schools.—At a meeting of the health officers and public health nurses of the state at Madison, recently, a resolution was adopted endorsing a plan for a systematic course of health instruction for all teachers in normal and other training schools. It was requested that the state superintendent of public instruction bring the matter to the attention of all schools, which will thereupon be furnished by the state board of health with suitable material for instruction. Dr. Charles R. Bardeen, dean of the University of Wisconsin Medical School, Madison, gave an address at the meeting.

Wisconsin General Hospital.—Construction of the $1,350,000 Wisconsin General Hospital, authorized by the special session of the legislature in 1920, will go forward at once from funds made available through the service recognition board. The building of this hospital, on which a four-year medical course of the University of Wisconsin is to be developed, has been held up by Governor Blaine for the last year and a half, because of his belief that there were not sufficient funds in the treasury to warrant construction. Recovery of unreported income taxes amounting to $250,000 has replenished the hospital fund.

Health Policy to Be Changed.—The health department of Milwaukee has been caring for persons afflicted with venereal disease by treating them in city institutions for the last several years. August 25, it was learned that, on the opinion of the attorney-general, they could be committed to county and state institutions for treatment, even against their will. The opinion was given on the request of Dr. Cornelius A. Harper, Madison, director of the state board of health. Present laws, however, do not permit of criminal prosecution for refusal to accept treatment, but it is expected that a bill to make refusal of treatment a criminal offense will be presented to the next legislature.

PHILIPPINE ISLANDS

Rockefeller Foundation Fellows.—Director Elmer Merrill of the Bureau of Science, Director Vincente de Jesus of the Philippine Health Service and Miss Giron of the Philippine General Hospital, have been appointed a committee of three to select six physicians and two nurses to become fellows of the Rockefeller Foundation. The fellows selected will study public health work.

CANADA

Medical Association News.—At a meeting of medical women, held recently in Toronto, Ont., preliminary steps were taken to form a Canadian women's medical association. A committee was formed, consisting of Drs. Esther H. Loudon, Toronto, and Lilias W. Cringan, Calgary, Alta., for the purpose of getting in touch with all the woman physicians in Canada, in an effort to secure their membership for the national organization. Drs. Sproule-Mason and Isabel Ayer, both of Toronto, Ont., were appointed acting president and secretary, respectively. Dr. Jennie Smillie was appointed delegate to the international conference of medical women, to be held in Geneva, Switzerland, in September of this year.

Personal.—Sir Charles Scott Sherrington, M.D., president of the Royal Society, and Waynflete professor of physiology at Oxford University, England, has accepted an invitation to attend the formal opening of the new biologic building of McGill University, Montreal, Que., in October.——Dr. Donald S. McLennan has been appointed medical officer of health for New Toronto, Ont. He succeeds Dr. G. L. Serson, who has occupied these posts for a number of years.——The Hon. Dr. Henri S. Beland, minister of health for Canada, and his bride were the recipients of a handsome silver service, presented by Dr. Beland's colleagues in Ottawa, on their return to Ottawa, from their honeymoon recently.——Dr. Alexander MacKay, provincial inspector of prisons and public charities, has been gazetted lieutenant-colonel on the retired list of the Thirty-Sixth Peel Regiment.

University News.—The Province of Quebec has purchased from the U. S. Radium Corporation, one gram of radium, valued at $100,000, for the use of its citizens in the treatment of cancer and other malignant diseases. The radium will be sent to the University of Montreal, Montreal, Que., where, under the supervision of Dr. J. A. Gendreau, it will be at the service of the people of Quebec Province.——The removal of McMaster University from Toronto to Hamilton, Ont., now seems unlikely, in view of the fact that certain fundamentals of the Baptist Church forbid the university to accept state aid, and that there is a scarcity of funds for the purpose of removal. The report of the committee of the board of governors of the university, who have been looking into the matter of the removal, will be presented this fall. It is believed that any federation with the University of Toronto will not be acceptable except in case of dire necessity, as various considerations tend to discourage such a course.——In accordance with a plan decided on by the universities of Canada, the Medical College of the Western University, at London, Ont., will this year limit the number of freshmen, and will accept only fifteen new students when the school reopens in the autumn. It has been demonstrated that medical colleges in Canada have been turning out more physicians than the demand warrants.

GENERAL

George Creveling Joins the Medical Times Staff.—It is announced that George B. Creveling, for twenty-five years advertising manager with the *Medical Record*, has been elected secretary and a director of *The Medical Times*. He will also be in charge of the advertising department.

Hygiene Board Discontinued.—The Interdepartmental Social Hygiene Board recently went out of existence with the ending of the fiscal year. No appropriation for its continuation had been made. A bill has been introduced authorizing the Department of Justice to take over the work of the board, but no action has yet been taken on this bill.

Creation of Independent Prohibition and Narcotic Bureau.—Two bills, one introduced by Representative Wood of Indiana and one by Senator Ernst of Kentucky, were introduced in the House recently and referred to the Committee on Judiciary. These bills, identical in wording, provide that a separate bureau under the direct control of the President shall be created for the enforcement of the prohibition and narcotic laws.

American Dietetic Association.—The fifth annual meeting of the association will be held at Washington, D. C., October 16-18, with headquarters at the New Willard Hotel. An exhibit of equipment, food materials, charts and other illustrative matter valuable to a dietitian will also be a feature of the convention. Speakers of national importance will discuss recent developments in dietetics, as well as administrative and other practical problems of the dietitian.

Senate Passes Water Pollution Bill.—The Senate this week passed the bill recently introduced by Senator Frelinghuysen prohibiting the discharge of oil and other pollution into navigable streams. Supporters of the measure claimed that it was designed to avoid unhealthy conditions along water fronts, as well as to eliminate fire hazards, which are said to endanger water front property in many cities as a result of the constant discharge of oil into streams and harbors. The measure now goes to the House.

Production of Synthetic Chemicals.—The total production in the United States of synthetic organic chemicals other than those derived from coal tar, which are used as medicinals, perfumes, flavoring ingredients and solvents and in numerous industrial processes, was 21,545,186 pounds in 1921; the sales amounted to 16,761,096 pounds, valued at $13,746,235. The development of this industry in the United States has been similar to that of the dye industry, as the supply of synthetic organic chemicals was controlled primarily by Germany prior to the war.

Rockefeller Foundation.—President G. E. Vincent recently stated that 157 persons held fellowships in the Rockefeller Foundation during 1921, funds for which were supplied by the foundation, directly or indirectly. Among these were seventy-one Americans, one Belgian, seven Brazilians, eleven Canadians, one Singhalese, seventeen Chinese, one Colombian, two Costa Ricans, nineteen Czechs, seven British, four French, one Guatemalan, one Mexican, two Nicaraguans, seven Poles, two Salvadoreans, two Syrians and one Norwegian.

Hay-Fever Association.—In the forty-ninth annual report of the United States Hay-Fever Association, statistics are compiled for the benefit of those afflicted with hay-fever, indicating the degree of immunity experienced by members of the association at summer resorts in the United States and Canada. The highest rating of all is awarded to Campobello Island, N. B., Canada, where forty-eight members found total immunity from the illness. Members of the association reported as to whether they were immune, not immune or partially immune at 106 summer resorts which are listed in the report.

Provisional Birth Figures for 1922.—The department of commerce announces that provisional birth figures compiled by the bureau of the census for the first quarter of 1922 indicate lower birth rates than for the corresponding quarter of 1921. For the states compared, the total birth rate for the first quarter was 23.3 in 1922 as against 25.3 in 1921. The highest birth rate for the quarter (29.2) is shown for North Carolina and the lowest (16.5) for the state of Washington. Higher rates will be necessary for the remaining months of the year if the 1922 rate is to equal the 1921 rate for the birth registration area—24.3.

Provisional Mortality Figures for 1922.—The department of commerce announces that provisional mortality figures compiled by the bureau of the census for the first quarter of 1922 indicate higher death rates than for the corresponding quarter of 1921. For the states compared, the death rate for the first quarter was 13.7 in 1922 as against 12.6 for the first quarter of 1921. The highest mortality rate for the quarter is shown for the District of Columbia (17.6) and the lowest for Wyoming (9.6). These early figures forecast for the year 1922 a higher rate for the death registration area than the record low rate (11.7) for the year 1921.

Minnows for Malaria Prevention Shipped to Palestine.—Dr. Shapiro and Mr. Weigemann of the International Health Board, Rockefeller Foundation, recently arrived in America from Palestine, to study American methods of malaria and mosquito control. They have conferred with the bureau of fisheries and the U. S. Public Health Service and have ordered a shipment of the common top-water minnow, known as the gambusis, to Palestine to combat the mosquito. The minnow is used extensively as an agent for the control of mosquitoes in the South, the Hawaiian and the Philippine Islands and Spain, where the employment of the fish has proved effective.

Welfare of Women and Children.—The U. S. Children's Bureau has recently issued pamphlets on "Industrial Home Work of Children" (Bureau of Publication No. 100), a study made in Providence, Pawtucket and Central Falls, R. I.; "Children of Wage-Earning Mothers" (Bureau of Publication No. 102), a study of a selected group in Chicago; and "Child Labor and the Work of Mothers in Oyster and Shrimp Canning Communities on the Gulf Coast" (Bureau of Publication No. 98). The U. S. Women's Bureau has issued a pamphlet on "Women in Georgia Industries" (Bulletin No. 22), a study of hours, wages and working conditions. Health and sanitation are discussed in each of these pamphlets.

Pacific Association of Railway Surgeons.—At the twentieth annual session of the Pacific Association of Railway Surgeons, held in San Francisco recently, the following officers were elected for the ensuing year: president, Dr. Walter B. Coffey, San Francisco; vice presidents, Drs. George R. Carson, San Francisco, and George W. Stout, Ukiah; treasurer, Dr. Ernest M. Keyes, Alameda, and secretary, Dr. W. T. Cummins, San Francisco. In a resolution passed at the meeting, the association condemned "singly and collectively the chiropractic, osteopathic and antivivisection initiatives" and urged all those interested in the scientific study, prevention, cure and control of disease and the promotion of public health to vote against these measures.

Good Health Week.—With the cooperation of leading manufacturers, Good Health Week will be inaugurated throughout the country, October 23-30, under the auspices of the Good Health Week Promotion Bureau of Milwaukee, of which William Hatch is secretary-treasurer. The executive committee will be assisted by a medical committee of five physicians prominent in public health work, who will check over any medical statements made, to insure accuracy from a medical standpoint. There will also be an advisory committee of twenty-five physicians, professional, and business men, to whom the policy of the campaign will be submitted for suggestions. The Good Health Week Promotion Committee is prepared to furnish good health articles on the subjects of ventilation, sanitation and personal hygiene.

Bequests and Donations.—The following bequests and donations have recently been announced:

The Children's Memorial Hospital, Chicago; the Visiting Nurses' Association, the United Charities, the Chicago Home for the Friendless, Chicago Nursery and Half Orphan Asylum, Chicago Home for Destitute Crippled Children, the Country Home for Convalescent Children and the Scottish Old People's Home of Riverside are among the recipients of Continental and Commercial National Bank stock, valued at more than $1,300,000, under the will of Mrs. Nellie A. Black.

Presbyterian Hospital, New York, $100,000; New York Society for the Relief of the Ruptured and Crippled, $10,000; Northern Westchester Hospital Association, $10,000, and St. John's Guild, New York, $10,000, by the will of William Sloane.

Roosevelt Hospital, New York, the residuary estate of the late Elizabeth A. Osgood, amounting to $411,556.

Tulane University, New Orleans, $50,000, in memory of her father, by the will of Mrs. Josephine Electa Howard, wife of Dr. W. A. Howard.

Truesdale Hospital, Fall Fiver, Mass., $25,000, by Mr. and Mrs. Earle Charlton of Fall River; $25,000, by Mrs. John P. McGowan of Little Compton, R. I., and $5,000 by Dr. M. Lawrence Turner of Washington, D. C., for the addition of new fifty-bed wing.

Winthrop Community Hospital, Winthrop, Mass., $35,000, as the result of a drive for funds. This money will be used to purchase the Metcalf Hospital and provide it with equipment.

Southampton Hospital, Southampton, L. I., $31,000, the proceeds of a street fair held, August 4.

Salem, Ore., for a new hospital, $5,500, toward a fund of $25,000, from subscriptions.

Beth Israel Hospital, New York, $5,000, by the will of Aaron J. Bloomberg.

St. Agnes Hospital, Philadelphia, $1,000, by the will of Elizabeth O'Keefe.

Hicks Memorial Hospital, Oxford, N. C., $1,000, and the Oxford Orphan Asylum, 1,250 yards of homespun for winter garments, by Mr. F. L. Seely.

Lincoln Methodist Hospital, Lincoln, Neb., his Lincoln estate, "Fairview," to be remodeled as a hospital, by William J. Bryan.

St. John's Riverside Hospital, Yonkers, N. Y., the endowment of two beds, by the will of Emily M. Trevor.

Massachusetts General Hospital, Boston, the ophthalmologic department, the principal of the estate of George D. Loud, eventually.

Charity Hospital and the Touro Infirmary, New Orleans, one Hess incubator bed each, by Mr. Samuel Bonart of New Orleans.

LATIN AMERICA

Personal.—The Mexican secretary of war has appointed among those to represent Mexico in the centennial celebration of the independence of Brazil, the army medical officers, Dr. Enrique and Dr. Servando Osornio Camarena, and the alumni of the military school, C. Vásquez del Mercado and Luis Trujillo. This medical group will accompany the official delegation.

FOREIGN

Prize Awarded to Hasebroek.—The *Klinisch-therapeutische Wochenschrift* relates that seventeen articles were received in competition for a prize offered by H. Cohn of Hamburg for the best work on the scientific grounds for monism on a theistic basis. The prize was awarded to Dr. K. Hasebroek of Hamburg.

Opposition to Birth Control.—Catholic medical men in Glasgow, Scotland, with the Archbishop of Glasgow as chairman, have passed a resolution urging the British government to make the publication and distribution of birth control literature and appliances a penal offense. Sterilization of the unfit was denounced by unanimous resolution as opposed to the fundamental principles of Christianity.

Retirement on Reaching the Age Limit.—Among those retiring this year on account of having reached the official age limit for university professors is Dr. W. Uhthoff, the ophthalmologist. His chair in the University of Breslau is to be offered to Dr. A. Bielschowsky, professor of ophthalmology at Marburg.——Dr. Dante Giacobbi, professor of clinical medicine at the University of Parma, was presented with a gold medal by his friends on the occasion of his retirement recently.

Foreign Practice Diplomas.—The University of Hamburg has organized courses to fit a physician to practice in a foreign land. The examinations are not on professional topics but on countries (Spain, Spanish America, the Netherlands, Sweden, Denmark and Norway). The candidates are examined in the language of the country, its history, political and intellectual development, civics, etc., with tropical or other special medicine as an optional course. The university has arranged courses to conform to these *auslandsdiplomprüfungen* to prepare both theoretically and practically for establishing a practice in a foreign land.

Personal.—Dr. J. Verdes Montenegro, a tuberculosis specialist at Madrid, has been commissioned by the Spanish minister of public instruction to investigate on the spot the measures adopted for the fight against tuberculosis in France and Germany.——The Italian military authorities recently presented Dr. E. Trombetta and Dr. S. Santucci, general and brigadier general, with an illuminated address and gold medal in appreciation of especial services rendered. They are ophthalmologists connected with the University of Turin. ——A memorial tablet was recently unveiled in honor of the alienist, Dr. P. Repond, at the sanatorium Malevoz, of which he was the founder. It is the first time in Switzerland that the cantonal government ever inaugurated a memorial of the kind with official ceremonies.

The Netherlands Council on Pharmacy and Chemistry.—The third bulletin issued by the Rijks-Instituut voor Pharmaco-Therapeutisch Onderzoek appeared in June, and contained reports on twenty-five different proprietary pharmaceutical preparations, besides a group of iron preparations. It is the intention to publish an annual list of articles which stand accepted after thorough investigation. The *Bulletin* warns that any quotation from its publications by those sending in articles to be examined or others must always state the exact source of the quotation or state "Included in the annual list of articles accepted by the Rijks-Instituut voor Pharmaco-Therapeutisch Onderzoek." Research is under way on digitalis, arsphenamin, chenopodium oil, etc. Prof. L. van Itallie is the president of the council, and Dr. A. J. Steenhauer is secretary, both of Leiden. The whole work is modeled on that of the Council on Pharmacy and Chemistry of the American Medical Association, but the institute is proceeding only tentatively at first.

Deaths in Other Countries

Dr. **Arthur Ramsome,** formerly lecturer on biology at the University of Cambridge, England, and professor of hygiene at Owens College, Manchester; author of "Prognosis in Lung Disease" and associate editor of *Zeitschrift für Tuberkulose;* July 25, aged 88.——Dr. **Edward H. E. Stack** of Bristol, England, ophthalmologist; served in the R. A. M. C. during the World War; surgeon to the Bristol Royal Infirmary; in London, August 3, aged 55.——Dr. **John Maitland Forsyth,** representative on the medical council for the Straits Settlements and Federated Malay States of the British Medical Association; June 26, in Singapore.——Captain **N. N. G. C. McVean,** Indian Medical Service; July 21, aged 42.——Dr. **Arthur J. Harries,** formerly physician and lecturer on clinical dermatology, St. John's Hospital, London; pioneer of electrotherapeutics for diseases of the skin in England; July 28, aged 66.——Dr. **C. Scanardo** of Ravenna, victim of an assassin.——Dr. **A. Wiesinger,** long surgeon in chief of the Hamburg St. Georg Hospital, aged 71.——Dr. **A. Mégevand** of Geneva, aged 80, one of the founders of the Geneva Canton Medical Association.

CORRECTION

American Hospital Association.—The annual convention of the association will be held in Atlantic City, September 25-30, and not at West Baden, Ind., as previously announced.

Government Services

Bill Introduced for Removal of General Sawyer

Representative Ryan of New York introduced a resolution in the House this week calling for the removal of Brig. Gen. Charles E. Sawyer, private physician to President Harding, as chief of the coordination section of the U. S. Veterans' Bureau.

Departmental Reorganization Postponed

The Harding administration plan for the reorganization of the executive departments of the government, including the various bureaus devoted to medical and public health activities, will not be submitted in the form of proposed legislation to Congress this session. Indications to this effect were made at the White House this week. It was stated, however, that the Bureau of Coordination, of which Walter H. Brown is the head, is constantly at work on the task of overcoming difficulties and friction between the various departments affected by the proposed legislation. The announcement from the White House is in accord with the statements from time to time published in THE JOURNAL, to the effect that this reorganization could not be accomplished during the present Congress. It is known that this undertaking is one of the leading policies which President Harding hopes to establish during his administration, and he is personally disappointed that his plans have, because of the pressure of other legislation, failed thus far to reach fruition.

Legislator Blocks Appropriation for Leprosarium

Declaring that if the national government undertook the care of all persons suffering with leprosy in the United States it would soon be called on to care also for all tuberculous patients, Representative Stafford of Wisconsin blocked consideration of the bill providing funds for the erection of additional buildings at the National Leper Home at Carville, La., in the House, September 1. The bill came up under the unanimous consent calendar and was passed over as a result of the objection. In explaining his objection to the immediate consideration of the bill, which appropriates $650,000 for the leprosarium at Carville, Representative Stafford said:

> The national government had already provided an appropriation of $250,000 for the accommodation of 200 lepers at this leprosarium, which was opened for the reception of patients in March, 1921. There are 100 additional applications on file. The bill provides for 300 additional beds. If it is going to be the policy of the national government to take over all of the health activities of the government and that no health activities shall be prosecuted by the states, that the states, including those in the South, are to abandon their ancient doctrine of state rights in looking after the health and security and protection of their own, this appropriation will mount to not only a million but to many millions, and we will have the care of all tuberculous patients and every other invalid, by the national government.

Military Bill Passes House

The House Military Affairs Committee has reported favorably the bill introduced by Representative Anthony of Kansas, designed to remove restrictions under which the war department is operating in its task of reducing the commissioned personnel of the army to the strength provided in the recent annual appropriation bill. The Anthony measure makes mandatory the distribution of surplus army officers through demotions, thus overcoming the possibility of creating an additional officers' list and requiring the elimination

of officers whose records made them particularly valuable. The committee acted promptly after it had heard Major-Gen. J. G. Harbord, deputy chief of staff, who said the present legislation was a result of a misunderstanding as to the recommendations of the department. The Anthony bill provides a minimum elimination of 880 officers from the army, to bring the total to 12,000, as required by law. It also provides that, in case of demotion, officers shall continue to receive the pay and allowances of their present grade. The measure after a short debate in the House of Representatives, September 1, was passed by a vote of 180 to 35.

Soldiers' Hospital Near Chelsea, N. Y.

Assistant Secretary of the Treasury Clifford has announced that the government has acquired the proposed soldiers' hospital site near Chelsea, N. Y., and that a preliminary contract for grading and excavation for the building has been awarded for $17,000. The property was purchased for the sum of $100,000. It is known as "Summerfields." The plot consists of 228 acres sloping back from the Hudson River to an elevation of 250 feet. On the property are orchards, gardens, a large residence and twenty-six other buildings. This site was chosen on the recommendation of the National Tuberculosis Association.

Dr. Adsitt on Hospitalization Board

Dr. Henry Adsitt, surgeon, Buffalo, N. Y., has been named chairman of the national hospitalization committee of the disabled American war veterans of the World War. He will represent the disabled veterans on the Federal Hospitalization Committee in charge of Brig. Gen. Charles E. Sawyer. General Sawyer agreed to place a representative of the disabled American veterans on the federal hospitalization board last week when Commander Cook and Adjutant Lasange conferred with President Harding and General Sawyer.

Bill for Disabled Emergency Officers

Emergency officers who incurred physical disability equal to 30 per cent. permanent disability, duly rated by the U. S. Veterans' Bureau, shall receive the same privileges accorded retired officers of the regular army, if this bill introduced by Representative Hill in the House finally becomes a law. A further provision in the measure gives such officers with less than 30 per cent. permanent disability the same privileges as retired officers of the regular army, but without retired pay. The bill also provides that payments of these compensations to disabled emergency officers under the terms of the proposed act shall be made by the U. S. Veterans' Bureau instead of the war department.

Gas vs. Tuberculosis

At the recent convention of the board of medical officers of the U. S. Army at Fort Grant, Ill., held for the purpose of examining all soldiers claiming disability from the effects of gas, 2,000 were examined. Following this examination, it was stated that gas victims, irrespective of the type of gas and the severity of the attack sustained, showed no marked predisposition toward active pulmonary tuberculosis, or toward the reactivation of a healed or quiescent pulmonary lesion; also, that gassed victims presented little evidence of material destruction of lung tissue.

Rehabilitation Division of U. S. Veterans' Bureau

At the sixteenth annual convention of the North Carolina State Federation of Labor, August 15, a resolution was passed, again pledging the assistance of the members toward aiding the U. S. Veterans' Bureau in finding suitable employment for trained veterans and rendering them every assistance in making good in the positions in which they are placed.

New Reserve Organization

Pursuant to instructions of the Secretary of War, June 27, the organization of a general hospital, organized reserves, to be known as General Hospital No. 60 (Iowa Methodist Hospital, Des Moines) was authorized, it is announced by the Surgeon-General.

Foreign Letters

PARIS

(From Our Regular Correspondent)

Aug. 18, 1922.

Training of Medical Social Workers

The purpose of the Ecole des infirmières de l'assistance publique is to train social workers for the hospitals and municipal lodging houses administered by the Assistance publique (public charities) of Paris. The initial annual salary for such workers, after two years of study, is 4,850 francs (when lodging is not furnished), to which is added a bonus on account of the high cost of living (at present 730 francs), and a residence bonus of 1,200 francs for the region of Paris. During the course of their preparation, pupils receive their board and room and laundry. For the first year they receive an annual salary of 730 francs and for the second year, 1,095 francs, together with a residence bonus of 485 francs a year and a bonus, to cover the high cost of living, of 438 francs a year. Candidates for appointment must be unmarried and between the ages of 19 and 26. The course of study at the school includes: anatomy, physiology, administration, hospital management and discipline, hygiene, pharmacy, massage, electrotherapy, roentgenotherapy, theoretical and practical instruction in the care of patients suffering from affections of a medical or surgical nature, in the management of the insane, contagious cases, the aged, incurables, children, parturients and the new-born; dissection, theoretical and practical instruction in laboratory work, ward service, office service, in the preparation of decoctions, beverages and light dishes for the sick.

The Michelin Prize

The national alliance to promote an increase in population is planning a competitive contest with prize awards totaling 120,000 francs for the best essays setting forth the critical demographic situation in France and the best means of combating the danger. The first prize is 50,000 francs; the second, 10,000 francs; the third, 8,000 francs, while the balance of the 120,000 francs will be distributed in small sums. The essay which is awarded the first prize will be printed by the national alliance and 500,000 copies will be distributed throughout the country.

The competitors will deal more especially with the following topics, but they will not be confined to these:

A. The evil as it exists: (1) the decrease of the birth rate in France, during the past century; the inevitable further decrease in the future if the most energetic measures are not adopted, and (2) the dangers that lurk in the fall of the birth rate and the catastrophe that threatens not only the life of the nation but also the individual.

B. The proposed remedies: (1) the respect due to large families and the advantages that they deserve; (2) the reforms needed to raise the birth rate—at the price of financial sacrifices, if necessary; if by the expenditure of certain sums an increase in the number of births can be brought about, no money could be better expended, and (3) instruction in the matter of the moral, social and patriotic duty of paternity and maternity—their joys and their rewards.

A Monument to Yves Delage

A committee has been appointed to open an international subscription for the erection of a monument to the memory of Dr. Yves Delage, who held a professorship in the Sorbonne and whose death was recorded in THE JOURNAL, Nov. 27, 1920, p. 1510. The colleagues and friends of Delage think this memorial should be erected at Roscoff by the side of the monument of Henri de Lacaze-Duthiers, in the vicinity

of the maritime laboratory where Delage conducted so many important researches. The committee, on which many French and foreign biologists are serving, will be supported in its endeavor by Monsieur Leon Berard, minister of public instruction; Monsieur Appell, rector of the Academy of Paris, and Dr. Roux, director of the Pasteur Institute. Those wishing to subscribe to the undertaking are requested to send their contribution, as soon as possible, to Mlle. L. Dehorne, treasurer of the committee, Laboratoire de Zoologie à la Sorbonne, 1 Rue Victor Cousin, Paris (Ve Arr.)

Progress in Aviation in the Army Medical Service at Morocco

In a previous letter (THE JOURNAL, Jan. 14, 1922, p. 123) I referred to the transportation of wounded by aeroplane. According to the most recent information, transportation by aeroplane of the wounded and sick has become the normal method of evacuation. The aeroplane serves also, in case of emergency, for the transference of personnel and equipment. Between May 29, 1921, and April 20, 1922, 103 evacuations by aeroplane were effected, which signifies sixty-five separate flights and a distance of 6,070 kilometers covered. No accidents of a medical or mechanical character have happened.

BERLIN

(From Our Regular Correspondent)

Aug. 12, 1922.

Lessened Ability to Distinguish Colors as a Sign of Fatigue

As the result of the systematic examination of athletes following various forms of physical exertion, it has been shown that as the body becomes fatigued the ability to distinguish colors becomes much diminished. According to Boehmig, who has an article on the subject in the *Münchener medizinische Wochenschrift*, certain subjects who, when examined immediately before the physical performance, were found to possess a perfectly normal ability to distinguish colors, were unable, after the body became fatigued, to recognize the color of very small red and green objects, and some presented transient scotomas, which, however, were of a mild sort, so that the subjects were frequently not aware of their existence. In the case of heavy smokers and those addicted to alcohol, the manifestations appeared in a more marked form. The so-called fatigue substances will doubtless have to be assumed to be the cause of this hitherto unobserved disturbance of color vision. I have reference to the waste products of metabolism that collect in the muscular tissue following muscular activity and that cause the well known painful feeling in muscles that have been used to the limit. As a rule, these fatigue substances are removed from the muscular tissue through the blood stream, the skin, the kidney and the intestine, and are eliminated from the body. If the muscular work is prolonged, large quantities of the fatigue substances collect in the muscles or the blood stream; and since in this case elimination cannot proceed so rapidly, their harmful effect is noted, and the subject feels tired and exhausted. Certain investigators have regarded lactic acid as the main fatigue substance; others have postulated phosphoric acid, either free or combined, with acid salts. Their actual effect has been demonstrated by noting that when the blood of fatigued animals is injected into healthy resting animals distinct symptoms of bodily exertion and fatigue are produced.

Hypnosis and Mental Disease

Professor Siemerling, director of the psychiatric clinic in Kiel, has published an interesting study in the *Archiv für Psychiatrie* on the relationships between hypnotism and mental disease, in which he gives a critical discussion of the general value of hypnosis as a therapeutic remedy. All writers on the subject are taking a strong stand against the misuse of hypnosis, opposing especially all public demonstrations. Even Lombroso, who in general is an ardent advocate of hypnotism, warns against its misuse. He holds that the state has just as much justification to intervene and prohibit public demonstrations of hypnotism as it has to adopt measures against the misuse of narcotics and other methods of influencing the nervous system by artificial means. Siemerling emphasizes that no matter what conception one may take in regard to the essential nature of hypnosis it must ever be considered as a psychic trauma, and in every instance great care should be taken to determine whether the person who is to be subjected to hypnotic treatment is in condition to withstand such a trauma. When employed by a skilled physician, hypnotism may do good, just like any other therapeutic remedy, but it offers no guarantee of being unconditionally superior to other therapeutic measures. In the matter of hypnosis, we are entering a field in which exaggeration, deception and self-deception play an important part. This fact should never be lost sight of in estimating the curative effects of hypnotism. Several cases have been reported in the literature in which subjects are said to have been so strongly influenced by hypnosis that they surrendered their will absolutely to the operator. In all these cases, however, especially if a sexual factor enters in, considerable doubt may be entertained whether hypnosis was even needed to attain such a result. It is an established fact that in the case of persons who are especially open to suggestive influences, hypnosis is not an absolute requisite. Siemerling has observed many cases in which the absolute surrender of will had a sexual basis. Other observations show that even without hypnotic influence there may be marked subjection to the will of another person. In view of the strong influence that may be exerted by hypnotism, Siemerling thinks it is very unwise to think of using hypnotic methods to secure evidence in court from witnesses, either with their consent or against their will.

Social Insurance in Germany

According to the government report, government accident insurance was accorded in 1920 to sixty-seven different industries operating 804,711 plants and employing 9,537,350 persons. The total number of accidents reported in 1920 was 591,922, 9,338 of which were fatal, while 659 resulted in permanent total incapacitation. The number of accidents with fatal outcome has decreased somewhat. The report on the amounts paid to the sick and incapacitated, as well as to the families of the insured, shows a considerable increase over previous years.

Marriages

ROMEYN TREADWELL ALLEN, Schenectady, N. Y., to Miss Francis Colver Braley of Glens Falls, N. Y., August 19.

PAUL FARR RUSSELL, New York, to Miss Phyllis Hope Addition at Owl's Head, Me., August 10.

FREDERICK ALFRED WURZBACK, JR., New York, to Miss Lula Early of Corbin, Ky., recently.

ELI L. LEVIN, Indiana Harbor, Ind., to Miss Anne Goldstein of Atlanta, Ga., September 3.

ALFRED C. WOOD to DR. DOROTHY DONNELLY, both of Philadelphia, August 24, in Paris.

JOHN W. CONWELL to Miss Helen Bullock, both of Cleveland, July 27, at Cadiz.

JUDSON P. PENDLETON, Brooklyn, to Miss Elsie M. Lyon of Bangor, Me., August 2.

JOHN W. MEANS, Columbus, to Miss Madelaine Butler of Plain City, August 3.

E. B. WALKER to Miss Geneva Wilson of Mayfield, Ky., June 15.

Deaths

Alexander Righter Craig, Secretary of the American Medical Association since 1911, died of uremic poisoning while on his vacation at Port Deposit, Maryland, September 2, aged 54. Dr. Craig was born in Columbia, Pa., July 31, 1868, the son of Dr. Alexander Craig and Eleanor Margaretta Righter Craig. He received his A.B. degree from Franklin and Marshall College, Pennsylvania, in 1890, the A.M. degree in 1893 and the M.D. from the Medical Department of the University of Pennsylvania in 1893. In 1920 he was granted the honorary degree of Doctor of Science by Franklin and Marshall College, his alma mater. Following his graduation in medicine Dr. Craig served as resident physician at the Philadelphia Polyclinic Hospital, 1893 to 1894. He then practiced in Philadelphia until 1895 and in Columbia, Pa., from 1895 to 1906, when he removed to Philadelphia and continued practice until 1911. At the Los Angeles Session, in 1911, he was elected Secretary of the American Medical Association; this election was the culmination of many years of service to organized medicine. He had served Pennsylvania continuously in the House of Delegates from 1903 to 1910, and had been a member and chairman of many important committees. At three different Sessions he was Chairman of the Committee on Amendments to the Constitution and By-Laws, aiding greatly in the production of the Constitution under which the Association now operates. He was also Chairman of the Committee on Reports of Officers, in 1909. Since 1911, Dr. Craig has devoted his entire time to the work of the American Medical Association. He considered his vocation in the nature of a call for service much as would a minister who had been called to a religious undertaking. He was a member of the American Academy of Medicine and president in 1912, and a member of the American Academy of Ophthalmology and Otolaryngology. Dr. Craig was active in religious and social work, serving as elder and chief clerk of the sessions of the Fourth Presbyterian Church in Chicago. Two years ago Dr. Craig underwent an operation for removal of the gallbladder following a series of severe attacks of cholecystitis. He recovered satisfactorily and returned to his work with renewed ambition. During the St. Louis Session of the Association he demonstrated an efficiency in aiding the conduct of the Section Meetings and of the House of Delegates which met the unanimous commendation of all who attended the Session. His reelection at this Session to the office of Secretary was voted with enthusiasm. Following his return from St. Louis he continued his work, but had complained during August of severe attacks of gastric disturbance. On August 25 he left for his vacation at the family farm in Port Deposit. Telegrams announcing his death, September 2, were the first intimation had of his serious illness. The funeral was held at Port Deposit, Md., September 6. Dr. George E. de Schweinitz, President, represented the Association at the funeral. Dr. Craig was universally loved, a man with never a harsh word, calm, self-effacing, reticent, and withal a marvel of efficiency in his chosen work.

ALEXANDER RIGHTER CRAIG, 1868-1922

Otto Juettner, Cincinnati; Medical College of Ohio, Cincinnati, 1888; professor of clinical medicine and physical therapeutics, Cincinnati Polyclinic and Post-Graduate School, 1909; member of the American Electro-Therapeutic Association, American Physio-Therapeutic Association, Royal Society of Medicine (England), member of the London Roentgen Society, corresponding member of the German Roentgen Society, member of the Société de radiologie et electrologie (Paris), Academie Physico-Chimique Italienne; author of "Modern Physio-Therapy," "Songs of the University of Cincinnati," and other works; served in the M. C., U. S. Army, with the rank of captain, during the World War; died, August 25, aged 57.

Lee Benjamin Clarke ✠ Atlanta, Ga.; Medical College of the State of South Carolina, Charleston, S. C., 1897; associate professor of medicine, pediatrics and clinical diseases of children, Emory University School of Medicine, Atlanta; on the staffs of the Grady Memorial, and the Wesley Memorial hospitals; formerly president of the Fulton County Medical Society; died, August 24, aged 54, from paresis.

Theron Yeomans Sutphen ✠ Newark, N. J.; Bellevue Hospital Medical College, New York, 1873; member of the American Academy of Ophthalmology and Oto-Laryngology, American Ophthalmological Society and the American Otological Society; on the staff of St. Michael's Hospital; aged 72; died, August 24, in Maine.

Joseph Johnson Holt, New Orleans; New Orleans School of Medicine, 1861; member of the Louisiana State Medical Society; Confederate veteran; formerly professor of obstetrics at the New Orleans School of Medicine; at one time president of the Louisiana State Board of Health; died, August 23, aged 82.

Godfrey W. Rautenberg, Staten Island, N. Y.; Medical Department of the University of the City of New York, 1886; member of the Medical Society of the State of New York; died, August 21, aged 63, from inflammatory rheumatism with heart and kidney complications.

Frederic Milford Pendleton, Quincy, Ill.; Rush Medical College, Chicago, 1883; member of the Illinois State Medical Society; aged 63, died, July 6, at the Presbyterian Hospital, Chicago, following an operation for bladder trouble.

George M. Hamilton, Weston, W. Va.; Jefferson Medical College, Philadelphia, 1889; member of the West Virginia State Medical Association; formerly city health officer and county coroner; died, August 20, aged 61.

Henry Hannum, Bayfield, Wis.; Rush Medical College, Chicago, 1881; member of the State Medical Society of Wisconsin; in the Indian Service; died at the home of his son in Muskegon, Mich., August 16, aged 67.

William J. Stephenson, Decatur, Neb.; Medical College of Indiana, Indianapolis, 1886; member of the Nebraska State Medical Association; died recently, aged 70, from cerebral hemorrhage.

Levi Allen Neiman ✠ Brooklyn; Baltimore Medical College, 1897; on the staff of the Lutheran Hospital; died, August 25, aged 60, from streptococcus septicemia and endocarditis.

William S. Scott, Dickson, Tenn.; Vanderbilt University Medical Department, Nashville, 1876; member of the Tennessee State Medical Association; died, August 22, aged 69, from paresis.

Adolf L. Korn, Joplin, Mo.; University of Tübingen, Germany, 1902, member of the Missouri State Medical Association; on the staff of St. John's Hospital; died, August 16, aged 44.

Robert Charles McManus, Lancaster, S. C.; Medical Department of the University of the City of New York, 1881; died, August 9, aged 63, from carcinoma of the stomach.

Elnora Gilson Whitmore, Topeka, Kan.; Woman's Medical School of Northwestern University, Chicago, 1894; member of the Kansas Medical Society; died, August 19, aged 56.

Samuel Maxwell Johnson, Brooklyn; Bellevue Hospital Medical College, New York, 1880; for twenty years police surgeon in New York; died, August 17, aged 66.

Samuel D. Cameron ✠ Yakima, Wash.; Manitoba Medical College, Winnipeg, Man., Canada, 1899; was found dead in his office, August 19, aged 50, from heart disease.

John Emmet Rheim ✠ Mora, Minn.; Northwestern University Medical School, Chicago, 1910; died, July 31, aged 36, from acute dilatation of the heart.

Benjamin Pomeroy Wright, Schenectady, N. Y.; University of Michigan Medical School, Ann Arbor, 1885; also a numismatist; died, August 4, aged 64.

Marshall M. Chandler, Greenville, Texas; University of Nashville Medical Department, Nashville, Tenn., 1874; died, July 8, aged 83, from paresis.

Henry Hale Brotherlin ✠ Hollidaysburg, Pa.; Jefferson Medical College, Philadelphia, 1883; died, August 20, aged 62, following a long illness.

John Aaron Rawlins ✠ Davenport, Iowa; Rush Medical College, Chicago, 1888; died, August 18, aged 56, at Ainsworth, Neb., from paresis.

Martin E. Thomas, Paducah, Ky.; Memphis Hospital Medical College, Memphis, Tenn., 1898; aged 48; was found dead on the street, August 20.

Donald E. MacPhail, Dayton, Ohio; University of Michigan Medical School, Ann Arbor, 1914; died, July 4, aged 32, from lobar pneumonia.

Gerson Strauss, New Haven, Conn.; Baltimore University School of Medicine, 1895; died, August 11, aged 55, from cerebral hemorrhage.

Charles S. Horning, Norristown, Pa.; Hahnemann Medical College of Philadelphia, 1881; died, August 16, from locomotor ataxia.

John Elwyn Cochrane, Valatie, N. Y.; University of Vermont College of Medicine, Burlington, Vt., 1893; died, June 26, aged 51.

Elmer Ellsworth Curl, Degraff, Ohio; Jefferson Medical College, Philadelphia, 1889; died, August 13, aged 60, from diabetes.

Thomas Croston, Lucas, Ia. (licensed, Iowa, 1886); for fifty years a member of the school board; died, August 12, aged 76.

Joseph C. Purdy, Terhune, Ind. (licensed, Indiana, 1897); died, August 15, aged 67, from chronic nephritis.

B. F. Kiester, Dayton, Ohio; Medical College of Ohio, Cincinnati, 1875; died, August 21, aged 74.

Correspondence

SANITATION IN PANAMA

To the Editor:—In THE JOURNAL, August 5, under "Medical News," you quote the Panama *Star and Herald* to the effect that an epidemic of malaria has developed among Canal Zone employees, and that breeding places of mosquitoes, which had been sprayed with oil the year round, are now neglected, with the result that there are now more mosquitoes on the Isthmus than ever before, since sanitation days; also that Ancon Hospital is overcrowded with malaria patients.

I believe your readers will appreciate the truth regarding these reports, which have had a widespread circulation in United States papers. The statements of the Panama *Star and Herald,* published June 18, 1922, may be categorically denied:

There is not an epidemic of malaria among the employees of the Panama Canal.

Breeding places of mosquitoes, formerly sprayed with oil the year round, are not now neglected.

There are not more mosquitoes on the Isthmus than ever before since sanitation days, but indeed far less than in any previous year. Observations made and records kept for the last twelve years abundantly prove this.

Ancon Hospital is not overcrowded with malaria patients, there being not only fewer cases than the average number in former years, but, even when the reduction of Panama Canal forces is considered, the relative number is less than the average of former years.

After the appearance in the Panama *Star and Herald* of the article you quote, there were others of similar tenor, and on June 21 the governor of the Panama Canal published this statement:

THE PANAMA CANAL
CANAL ZONE
EXECUTIVE OFFICE

Balboa Heights, C. Z., June 21, 1922.

TO ALL CONCERNED:

Certain unauthorized, entirely inaccurate, and apparently malicious statements regarding the malaria situation and the work of the Health Department of the Panama Canal have been appearing recently in the daily press.

Even a carefully prepared statement of the chief health officer and other interviews have been published in a garbled manner under misleading headlines so as to give a different impression from that intended.

The known facts do not justify any undue alarm, nor are sanitary conditions on the Isthmus any worse, but rather better, than in former years at this season. The statistics of the health department, which are carefully recorded and are always available to interested inquirers, fully indicate the true condition.

At the beginning of each rainy season there is a natural increase of mosquito breeding, lasting through a couple of months, the most prevalent variety being a harmless, though vicious biter called *Aedes taeniorhynchus.* Anopheles, or malaria bearing mosquitoes, are kept under adequate control near our residential sections at all times.

The funds of the health department have been greatly curtailed in recent appropriations, but in anticipation of just such an eventuality, for several years past the division of sanitation has been carrying out a policy of eliminating by subsoil drainage large areas that had required maintenance, so that the present era of economy finds this division well prepared to cooperate to the fullest with the national policy of retrenchment. No vital element of sanitation is being sacrificed in doing so.

Grass cutting about quarters, while extremely desirable from an esthetic point of view, and as a measure of general policing, plays no part in the control of mosquito breeding, it being much more the part of wisdom to spend available public funds on drainage and control of areas in which mosquitoes are actually produced. This is being done, and it is believed our residential sections are thereby now even better protected than they were formerly.

There is not a case of blackwater fever in any of the Panama Canal or other hospitals, nor has there been a case originating on the Isthmus for several years. However, the type of malaria most prevalent in Panama at all times is a very serious type, unless promptly treated, and should never be disregarded. Under prompt and adequate treatment it is usually easily and permanently cured.

The health department has frequently issued warnings to the public of the danger of contracting malaria by visiting unsanitated areas after sundown, and this caution is again urged here. Beach parties, jungle trips and expeditions to native villages are safe and proper pleasures during daylight hours, but after nightfall, and especially in the rainy season, such unwarranted exposure is the height of imprudence.

JAY J. MORROW, Governor.

On July 5 there appeared in the New York *Times* an interview with Mr. W. C. Hushing, the representative of the Canal Zone union workers at Washington, D. C., in which even more fantastic statements regarding health conditions were uttered and graver charges made against officials of

the government and the Panama Canal. The governor branded Mr. Hushing's statements as false and discharged him from the Panama Canal employ (that of pattern maker and member of the wage board). Back of this controversy lies a complex situation, a knowledge of which is necessary to a complete understanding of the attack on the administration and the health department of the Panama Canal.

TABLE 1.—INCIDENCE OF MALARIA AMONG EMPLOYEES FOR THE LAST FOUR YEARS

	Rate per Thousand per Annum Among Employees
Fiscal year 1919	29.64
Fiscal year 1920	25.00
Fiscal year 1921	18.10
Fiscal year 1922	15.39

TABLE 2.—MALARIA INCIDENCE PER THOUSAND EMPLOYEES OF THE PANAMA CANAL

Month	1918	1919	1920	1921	1922
January	2.53	2.95	2.62	1.52	1.08
February	2.54	3.57	1.51	1.21	1.29
March	2.03	4.34	1.57	1.19	0.56
April	2.24	1.66	0.22	0.37	0.28
May	1.86	2.72	0.36	0.72	1.65
June	1.50	3.53	2.44	1.69	1.96
July	1.66	7.04	1.97	1.89	....
August	1.93	3.15	2.75	1.87	....
September	0.98	2.06	2.31	1.13	....
October	0.76	1.03	2.36	1.01	....
November	1.51	1.48	1.25	0.88	....
December	3.40	2.00	1.17	1.37	....

In June, 1921, a Special Panama Canal Commission, appointed by the Secretary of War, arrived on the Isthmus to

> investigate and report upon existing conditions relating to the care, maintenance, sanitation, operation and government of the Panama Canal and Canal Zone, including all matters affecting the Panama Railroad and the Panama Railroad Steamship Line, and to make recommendations relative to any changes in such conditions affecting the organization, government, and operation of the Panama Canal and Canal Zone, and the operations of the Panama Railroad Company.

This commission submitted to the Secretary of War a full report, with recommendations for the operation of every department of the Panama Canal. Many of their findings and recommendations were in accord with previous ones, and these and others received the approval of the Secretary of War and were placed in operation. Principally affecting, and objected to by, the employees was the order requiring them to pay rent on quarters and the cost of care of grounds immediately about their quarters, garbage collection, fuel, light, subsistence while in hospital, etc., all of which they had hitherto enjoyed free.

Also among the recommendations of the special commission was the following:

> It is recommended that the amounts expended for sanitation in the Canal Zone be greatly reduced and if as a result the sick and death rate from malaria rises above the average in twenty of the largest cities of the United States, the sanitary precautions may be increased.

This recommendation was not accepted by the Secretary of War and was not put into effect or included in the published report of the commission, although it was published in the daily papers on the Isthmus and elsewhere and aroused much unfavorable comment. Instead of this recommendation, the Secretary of War ordered as follows:

> The amounts expended for sanitation in the Zone shall be reduced as much as possible consistent with maintaining the necessary sanitary precautions requisite for the preservation of the health of American employees in tropical service.

This is the policy actually pursued by the health department for some years past.

Following the imposition of the charges outlined above, the employees attempted to obtain relief through the courts here and in the United States, but these ruled they had no jurisdiction, and the employees then decided to appeal to Washington, and sent for that purpose Mr. Hushing and another to represent them at the capital. Here, too, their efforts ended in failure, and then began, first on the Isthmus and later in the United States, the publication of these articles regarding health conditions on the Canal Zone. In the minds of the American people, the Panama Canal is a great monument, first to the skill, initiative and ability of their engineers, and second, but in no less degree, to the far seeing wisdom, self-devotion and courage of their medical and sanitary officers. General Gorgas reaped a well deserved meed of fame and devotion from his own and other nations. Herein lies the secret of the recent attack on health conditions. The employees of the Panama Canal wanted the ear of the people, that they might not voice their complaints unheeded, and in this at least they appear to have succeeded.

Unfortunately (for them) their assertions regarding health and sanitation are as easy to disprove as they would be had they stated that the Panama Canal was failing to operate in a physical way—that ships are not put through on time or are endangered in their passage. In no other disease are cases reported, investigated and followed up more closely than in malaria. The accompanying tables show the incidence of malaria among employees for the last four years.

Were these figures separated for white and colored employees, the white rates would be even better than the totals. Owing to lack of work, many colored employees are engaged by the canal only a small portion of their time, and when not so employed they are roaming about, seeking food and small jobs, in various places outside the sanitated districts.

There was a definite increase in 1921 and 1922 in the total number of malaria cases on the Zone among nonemployees of the canal (including army and navy forces as well as others), but this cannot in any way be ascribed to a fault of the program of sanitation. The army, which shows the greatest increase, has been engaged from time to time in very necessary maneuvers and reconnaissances in the unsanitated parts of the Zone and the Republic of Panama, resulting, for a time at least, in a heavy malarial infection. The Canal Zone has recently been opened to repopulation by discharged former colored employees, who have been allotted for agricultural purposes small tracts of uninhabited land remote from the canal settlements and towns, and these too are now furnishing—as was expected—a number of malarial infections.

I think I have written enough to show the fallacy of the published accusations against the health administration of the Canal Zone. Were they true, I should be among the first to protest publicly against the commission of so great a crime.

D. P. CURRY, M.D., Balboa Heights,
Acting Chief Health Officer. Canal Zone.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

CHENOPODIUM OIL

To the Editor:—In all cases of proved intestinal infestation with parasites, I give chenopodium oil. Its effects are really wonderful. No intestinal parasite stands against it. There are, however, two serious objections to its use, namely, its odor and its taste. Patients, both adults and children, take it with much distaste, and the majority vomit it, losing its benefit.

V. RODRÍGUEZ ARJONA, M.D., Mexico.

ANSWER.—This objection has apparently been obviated by giving the drug in freshly prepared, hard gelatin capsules (Darling, Barber and Hacker: Hookworm and Malaria Research in Malaya, Java, and Fiji Islands, Pub. 9, International Health Board, 1920. Darling, S. T., and Smillie, W. G.: The Technic of Chenopodium Administration in Hookworm Disease, THE JOURNAL, Feb. 12, 1921, p. 419.

Royer, E. R.: Hookworm and Other Intestinal Parasites in Ecuador, THE JOURNAL, Dec. 18, 1920, p. 1702). In some of Royer's cases, vomiting was apparently due to the administration of chloroform in castor oil following the treatment, and the trouble did not recur when magnesium sulphate was substituted. In children the dosage must, of course, be graded according to the age, and the drug may also be administered in a teaspoonful of granulated sugar. In hospital cases, an intestinal tube may be used, such as the one described by Kantor in THE JOURNAL, Oct. 18, 1919, p. 1181.

"THE BLOOD DURING WATER TRANSPORT"

To the Editor:—I am much interested in the editorial on "The Blood During Water Transport" (THE JOURNAL, August 5, p. 477). I enclose a reprint appearing recently which answers some of the questions raised in that editorial. It is probable that the title of this reprint was not properly worded, and therefore the writer of the editorial was not familiar with these experiments, which show that copious water drinking increases appreciably the plasma volume of dogs.

G. H. WHIPPLE, M.D., Rochester, N. Y.

ANSWER.—In the editorial referred to by our correspondent, it was pointed out that, despite great variations in the water output from the body, it is a rarity to detect even minute changes in the electrical conductivity of the serum, a factor susceptible of being measured with a considerable degree of accuracy. At any rate, the changes, if they occur, are so slight and inconstant that they cannot be connected definitely with changes in the intake of water which might well be expected to produce alterations in the composition of the blood. It was pointed out, however, that the facts on record do not contradict the possibility of some changes in the relative volume of plasma and corpuscles or in the total volume of the circulating blood. The very recent studies which Whipple and his associates at the University of California Medical School made on animals show that copious water ingestion does distinctly increase the plasma volume. When the amount of water taken into the stomach was large the increment amounted to as much as 40 per cent. in some cases. Active diuresis was established. Strangely enough, short periods of active exercise leading to considerable fluid loss from the body did not modify the total plasma volume.

HEALTH OF THE AMERICAN INDIAN

To the Editor:—Please give a list of the literature dealing with the health of the American Indian and the United States Indian Medical Service.

B. H. FRAYSER, M.D., Fort Harrison, Helena, Mont.

ANSWER.—

Contagious and Infectious Diseases Among the Indians, U. S. Public Health Service, 1913.

Hoffman, F. L.: Conditions in the Indian Medical Service, Prudential Life Insurance Company of America.

Moodie, R. L.: Surgery and Disease Among the Pre-Columbian Indians of North America, *S. Clinics,* Chicago **4:** 1091 (Oct. 20) 1920.

Indian Babies: How to Keep Them Well, Government document, Interior Department, 1916.

Safford, W. E.: Narcotic Plants and Stimulants of the Ancient Americans, Smithsonian Institution.

Hrdlicka, A.: Goiter Among the Indians Along the Missouri, *Science* **44:** 203 (Aug. 11) 1916.

Government Health Work Among the Indians, *Outlook* **114:** 168 (Sept. 27) 1916.

Murphy, J. A.: Work of the U. S. Indian Medical Service, *Survey* **33:** 444 (Jan. 23) 1915.

Maxwell, H.: Indian Medicines, *Scient. Am. Supp.* **86:** 100 (Aug. 17) 1918.

Eastman, C. A.: The Indians' Health Problem, *Pop. Sc.* **86:** 49 (Jan.) 1915.

U. S. Joint Commission on Indian Tuberculosis Sanitarium and Yakima Indian Reservation Project, Impounding Waters and Indian Tuberculosis Sanitarium, 1914 (Supt. of Doc.).

Brand, L. F.: Modern Medicine Man, *Survey* **47:** 218 (Nov. 5) 1921.

Ancient Botany of the Zuñi Indians, *Scient. Am. Supp.* **82:** 197 (Sept. 23) 1916.

Additional references can be obtained by writing to the Superintendent of Government Documents, Washington, D. C., or to the Superintendent of Indian Affairs, Interior Department, Washington, D. C.

Rapid Recovery.—An important contribution to the discussion as to the etiology of war neuroses was the statement made by Major General Ireland to the Senate Committee on Military Affairs, that of the 2,500 cases of shell shock awaiting transportation to the United States, 2,100 recovered within a day or two after the armistice was declared.—May, *Mental Diseases,* 1922.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

CALIFORNIA: Sacramento, Oct. 16-19. Sec., Dr. Charles B. Pinkham, 906 Forum Bldg., Sacramento.

DISTRICT OF COLUMBIA: Washington, Oct. 10. Sec., Dr. Edgar P. Copeland, Stoneleigh Court, Washington.

FLORIDA: Tallahassee, Oct. 10-11. Sec., Dr. W. M. Rowlett, Tampa.

GEORGIA: Atlanta, Oct. 10-12. Sec., Dr. C. T. Nolan, Marietta.

HAWAII: Honolulu, Oct. 9-12. Sec., Dr. G. C. Milnor, 401 Beretania St., Honolulu.

IDAHO: Boise, Oct. 3. Director, Mr. Paul Davis, Boise.

ILLINOIS: Chicago, Oct. 10-12. Supt. of Registration, Mr. V. C. Michels, Springfield.

KANSAS: Topeka, Oct. 10. Sec., Dr. A. S. Ross, Sabetha.

MASSACHUSETTS: Boston, Sept. 12-14. Sec., Dr. Samuel H. Calderwood, State House, Boston.

MICHIGAN: Lansing, Oct. 10-12. Sec., Dr. Beverly D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: Minneapolis, Oct. 3-5. Sec., Dr. Thomas S. McDavitt, 539 Lowry Bldg., St. Paul.

MONTANA: Helena, Oct. 3. Sec., Dr. S. A. Cooney, Power Bldg., Helena.

NEW JERSEY: Trenton, Oct. 17-18. Sec., Dr. Alexander MacAlister, State House, Trenton.

NEW MEXICO: Santa Fe, Oct. 9-10. Sec., Dr. R. E. McBride, Las Cruces.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 25-28. Ass't, Professional Examinations, Mr. Herbert J. Hamilton, State Education, Albany.

OKLAHOMA: Oklahoma City, Oct. 10-11. Sec., Dr. J. M. Byrum, Shawnee.

PORTO RICO: San Juan, Oct. 3. Sec., Dr. M. Quevedo Baez, Box 804, San Juan.

WEST VIRGINIA: Huntington, Oct. 10. State Health Commissioner, Dr. W. T. Henshaw, Charleston.

Minnesota April Examination

Dr. Thomas S. McDavitt, secretary, Minnesota State Board of Medical Examiners, reports the oral, written and practical examination held at Minneapolis, April 4-6, 1922. The examination covered 15 subjects and included 80 questions. An average of 75 per cent. was required to pass. Of the 9 candidates examined, 8 passed and 1 candidate, an undergraduate, failed. Eighteen candidates were licensed by reciprocity. One candidate was licensed by endorsement of credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Johns Hopkins University	(1919) 90.3,	(1921)	90.3
Harvard University	(1918) 89,	(1919)	87.2
University of Pennsylvania	(1916) 91.6,	(1917)	92
University of Toronto	(1915) 89.2,	(1920)	89.9

	FAILED	
Undergraduate		43

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Rush Medical College		(1921, 3)	Illinois
Indiana University		(1920)	Indiana
Iowa College of Physicians and Surgeons		(1895)	Iowa
State University of Iowa Coll. of Homeopathic Med.		(1906)	Iowa
Tulane University		(1921)	Louisiana
Medical School of Maine		(1906)	Maine
Johns Hopkins University		(1918), (1919)	Maryland
Detroit College of Medicine and Surgery		(1921)	Michigan
St. Louis University School of Medicine		(1918)	Missouri
Omaha Medical College		(1899)	Nebraska
Medical College of Ohio		(1897)	Vermont
University of Pennsylvania		(1919)	Wisconsin, (1920) Penna.
University of Pittsburgh		(1920)	Penna.
Wisconsin College of Physicians and Surgeons		(1909)	N. Dakota

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Syracuse University		(1920)	N. B. M. Ex.

District of Columbia July Examination

Dr. Edgar P. Copeland, secretary, Board of Medical Supervisors of the District of Columbia, reports the oral and written examination held at Washington, July 11, 1922. The examination covered 8 subjects and included 80 questions. An average of 75 per cent. was required to pass. Thirty-one candidates were examined, all of whom passed. Three candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Georgetown University	(1921) 84.8, 87.6,	(1922)	81.6, 81.6, 82.1, 82.1, 82.2, 84, 84.2, 85, 86.3, 88, 89.3, 89.7
George Washington University	(1921) 76.6,	(1922)	80.7, 81.8, 81.8, 83.5, 85.2, 87.6
Howard University	(1921) 83.2, 84.3,	(1922)	76.6, 80.3

Johns Hopkins University	(1922)	81.1
University of Maryland	(1922)	81
College of Physicians and Surgeons, Boston	(1921)	77.7
Fordham University	(1916)	81.6
University of Vermont	(1918)	81.5
University of Virginia	(1922)	85.2

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Howard University		(1892)	Virginia
College of Physicians and Surgeons, Baltimore		(1879)	Kansas
University of West Tennessee		(1914)	Tennessee

Book Notices

THE PRACTICE OF MEDICINE IN THE TROPICS. By Many Authorities. Edited by W. Byam, O.B.E., Lecturer on Tropical Medicine at St. George's Hospital Medical School, and R. G. Archibald, D.S.O., M.D., Director of the Wellcome Tropical Research Laboratories, Sudan Government, Gordon College, Khartoum. Volumes I and II. Cloth. Price, $75 per set of 3 volumes. Pp. 856, with illustrations. New York: Oxford University Press, 1921.

In two stately volumes published under the auspices of the British Fellowship of Medicine, the editors have prepared a system of tropical medicine to which practically all of the great English-speaking authorities of the world have contributed. The first volume is divided into six sections concerning hygiene and tropical sanitation, nursing, entomology, laboratory methods, snakes and snake poisoning, and toxicology. The second volume includes sections on differential diagnosis, bacterial diseases, and spirochetal and protozoal diseases. All of the articles are well worked up and profusely illustrated; the numerous color plates of tropical insects, snakes and plants being an exceedingly valuable feature. There are sixty-six color plates and almost 600 halftones and outline drawings in the two volumes. The American contributors include Bailey K. Ashford, who writes on "Ankylostomiasis"; C. C. Bass, "Rat-Bite Fever"; George E. Bushnell, "Tuberculosis in the Tropics"; H. R. Carter, "Yellow Fever"; C. F. Craig, "Imperfectly Differentiated Fevers"; Victor T. Heiser, "Plague"; H. S. Houghton, "Schistosomiasis"; L. O. Howard, "Non-Bloodsucking Diptera"; G. W. McCoy, "Leprosy"; G. M. Niles, "Pellagra"; Hideyo Noguchi, "Infectious Jaundice"; E. B. Vedder, "Deficiency Diseases," and S. B. Wolbach, "Rocky Mountain Spotted Fever." The two volumes contain as frontispieces portraits of Sir Patrick Manson and Professor Laveran. The books have excellent indexes both to the authorities cited and to the general subjects discussed. The preparation of these volumes has been an exhaustive and difficult task: they represent a great achievement in the literature of tropical medicine.

REPORTS OF ST. ANDREWS INSTITUTE OF CLINICAL RESEARCH, ST. ANDREWS, FIFE. Volume I. Cloth. Price, $3. Pp. 208. New York: Oxford University Press, 1922.

In the town of St. Andrews, Fife, there has been organized under the leadership of Sir James Mackenzie a group of physicians whose primary object is research. The cooperation of the general practitioners of this town of 10,000 people has been secured, and the hope is that by united, concentrated study of the commoner diseases, particularly in their earlier stages, more may be learned as to their earlier stages, their progress, the means of recognizing them, of foretelling their course and, so far as possible, preventing them. These workers are attempting to get some semblance of order out of the chaos of poorly understood symptoms. They are seeking for simplicity, for underlying principles that may help in diagnosis and prognosis. The emphasis in their work is on the clinical as contrasted with laboratory investigation. They are aiming "to restore clinical medicine to the van of research." The papers in this report are admittedly incomplete. Some are astonishingly amateurish in content and manner of presentation. The commonplaces that Mackenzie and his followers have so often and so wearisomely reiterated are here once more repeated, and we are again informed that all the medical world save these chosen few have been, and are, entirely wrong in their views and in their practice. But in spite of these blemishes, partly pardonable in a first report, there flash out here and there sudden truths that make us reflect and see that these men are striving toward high ideals, that there is much of truth in what they think and say. And so we can heartily say an encouraging word and hope that later reports may show progress and encouraging approach to results. It is to be hoped, too, that leaders of this group will realize that not every general practitioner is competent to observe and to draw conclusions. Directors of laboratories know what a very small percentage of recent medical graduates are qualified to act, even under guidance, as research workers. The number of those fitted by nature and training to be reliable clinical investigators will be found to be very small indeed. Unless this is recognized, the results of the St. Andrews Institute will be disappointing. Among the papers may be mentioned three by Mackenzie: "An Address on Clinical Research," "The Theory of Disturbed Reflexes in the Production of Symptoms of Disease," and "Prognosis." Rowand discusses the "Present State of Medical Knowledge Regarding the Diseases Common Among the People" and also the "Scheme for the Investigation of Disease in Childhood." Paton has a paper on "Care-Taking Methods" and also one on a "Clinical Study of Influenza." Professor Herring writes on the "Sensations as Reflex Manifestations of Disease"; Ramsay on the Response of the Eye to Effort"; Waterston on "Observations upon Cutaneous Sensation"; James Orr on the "Response to Effort," in our judgment the clearest and most satisfying article in the volume.

LE RÉFLEXE PILOMOTEUR. Étude Anatomo-Clinique sur le Système Sympathique. Par le Dr. André-Thomas, Médecin de l' Hôpital Saint-Joseph. Paper. Price, 25 francs, net. Pp. 242, with 86 illustrations. Paris: Masson et Cie, 1921.

This is a comprehensive study of the pilomotor reflexes in soldiers suffering from nerve lesions, chiefly of the spinal cord. In twenty-nine cases the author was able to check his clinical observations against findings at necropsy. On the basis of this information he has been able to construct a scheme of the arrangement of the pilomotor neurons—a field of work entirely new and of considerable clinical importance. The first chapter takes up the anatomy of the sympathetic nervous system and the physiology of the pilomotor reactions. The remaining chapters are devoted to the author's own observations, and contain numerous diagrams and tables showing the distribution of the pilomotor neurons. In transverse sections of the spinal cord there is blocking of impulses within the cord from segments above to segments below the lesion, and vice versa. If the skin is stimulated above the line of anesthesia, there is erection of the hairs in the dermatomes receiving pilomotor impulses from segments of the cord above the lesion. Some time after the injury, from several days to a few weeks, the segments of the cord below the lesion take on automatic activity. The pilomotor reflexes which can be elicited by stimulating the skin below the line of anesthesia are now of value in fixing the extent and lower limit of the lesion, the upper limit being determined by the line of anesthesia and the muscles which are paralyzed. The lower limit of the lesion can be determined, since it is known what dermatomes are supplied with pilomotor fibers by the various segments of the spinal cord.

MORFOLOGÍA Y BIOLOGIA DE LOS PROTOZOOS. Por el Dr. E. Fernández Galiano, Catedrático de Histologia y de Zoografía de Animales Inferiores en la Facultad de Ciencias de la Universidad de Barcelona. Paper. Price, 12 pesetas. Pp. 266, with 152 illustrations. Madrid: Calpe, 1921.

This is a compendium of available information on protozoa for the use of physicians and the public in general. While not quite up, either in scope or in handling, to the standard set by Minchen's classic, it presents in condensed and readable form a mass of information on a group of organisms, the full significance of which just begins to be appreciated. The book begins with a review of general characteristics and classification of protozoa; takes up the morphology of the most important species, motions, nutrition, reproduction and evolution, and in the last two chapters makes a general survey of the two points probably of most interest to the class the book is intended for: development of protozoa and their rôle as parasites. The many illustrations in the first part of the book are really interesting and valuable.

Medicolegal

Consideration of Character of Illegal Practitioner

(State v. Davis (Mo.), 238 S. W. R. 522)

The Springfield (Mo.) Court of Appeals, in affirming a conviction of the defendant of having unlawfully and wrongfully practiced medicine and surgery without having procured a license from the state board of health, says that the only error assigned in the defendant's brief on appeal was the exclusion of evidence offered by him showing his good reputation as a law-abiding citizen, and that the court failed to instruct the jury on this point. When the evidence was offered, the state admitted that the defendant's reputation for truth and honesty was good. But for the purpose of disposing of this appeal, the alleged error, if error, was not available to the defendant, because he, when placed on the witness stand, admitted that he had done the identical things which have been declared a violation of the statute under which he was charged. The question, therefore, of his guilt, was admitted. On the other hand, had the punishment for this admitted guilt, which was fixed by the verdict and judgment of sentence at the minimum established by the law, been greater than the minimum as fixed by statute, then the court thinks it would have been reversible error not to permit the jury to consider his previous good character; and the defendant would have been entitled to have attention called to such by instruction; all of which would have been matters for the consideration of the jury in fixing the amount of punishment to be given. But here was a defendant who, by his own admissions, convicted himself of violating the statute under which he was being tried, and who was meted out the least punishment fixed for such breach of the law. This court, therefore, fails to see wherein he could claim that the action of the trial court was prejudicial to him. It was not a case in which the guilt or innocence of the accused was in question, nor was he denied any right whereby his punishment might have been mitigated.

Ten Nonexperts and One Expert Against Two Experts

(Security Life Insurance Co. v. Black's Administrator (Ky.), 237 S. W. R. 1059)

The Court of Appeals of Kentucky, in affirming a judgment in favor of the plaintiff administrator on a policy of life insurance, says that the insurance company contended that the insured had made false representations in his application for the policy, these representations being that no member of his family ever had consumption. Two physicians who had attended the insured's father, who admittedly died of pneumonia, testified that in their opinion the father had tuberculosis of the lungs or throat for a long time before he died, and that they had treated him for that disease. It was on the testimony of those physicians that the company relied to sustain its burden of proving that the insured had falsely represented a material fact. Each of those physicians admitted, however, that the approved and best test for determining whether or not a person is afflicted with consumption is an examination of the sputum, and that this was not made. For the administrator ten neighbors of the father, who qualified as nonexperts, and one physician who frequently saw, but never treated, him, testified that, while never a robust man, he had not exhibited to them any of the well-known symptoms and evidences of this disease which is so prevalent and easily recognized that, when of long standing, it usually cannot be concealed from even casual acquaintances. The evidence for both sides as to whether or not the mother had consumption was virtually the same as with reference to the father. That the jury under the circumstances accepted the evidence of ten nonexperts and one expert witness rather than two expert witnesses, even though the latter had the better opportunity for observation, was not sufficient to enable this court to say that the verdict was so flagrantly against the evidence as to show clearly or at all that it was the result of prejudice or passion.

Validity of Provisions of Narcotic Drug Act

(Ex parte Bryson (Okla.), 205 Pac. R. 190)

The Criminal Court of Appeals of Oklahoma, in denying the petitioner a writ of habeas corpus and dismissing his petition for it, says that he represented that he had been arrested and was unlawfully held for an alleged violation of the narcotic drug act of that state of 1919, which he contended was unconstitutional. The purpose of the act is primarily to regulate the dispensing of narcotic drugs for medicinal purposes only, and in this connection makes it a felony for any person to violate the provisions of the act, among others of which is possession at one time of more than one dose of such drugs unlawfully acquired by any person who is not one of those excepted by the provisions of the act, and it is further provided that in charging the offense the exceptions contained in the act need not be negatived. In many of its provisions the act is similar to the federal act on the same subject, and also like those of many of the states. That in the exercise of the police power the legislature may regulate the sale and distribution of any drug in its nature poisonous, the use of which tends to debauch the public in the formation of a habit that undermines the physical, mental and moral constitution of its users, is no longer, this court thinks, a question of doubt. Nor does the court believe that the Oklahoma act is unconstitutional by reason of the provision in it that "it shall not be necessary to negative any of the aforesaid exceptions in any complaint, information or indictment" brought under the act, and the burden of proof of any such exemption or exception is put on the defendant; nor because of the provision that "any of such narcotic drugs found or discovered to be held or possessed by any person, firm or corporation except as permitted by this act shall be confiscated and delivered by the person or officer finding or discovering the same to the hospital of the medical department of the University of Oklahoma." It was contended that this was a taking of private property for public use without compensation, contrary to both the constitution of the United States and that of Oklahoma.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Oto-Laryngology, Minneapolis, Sept. 19-23. Dr. Luther C. Peter, 1529 Spruce St., Philadelphia, Sec'y.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Albany, N. Y., Sept. 19-21. Dr. James E. Davis, 111 Josephine Ave., Detroit, Secretary.

American Association of Railway Surgeons, Chicago, Oct. 18-20. Dr. Louis J. Mitchell, 29 E. Madison St., Chicago, Secretary.

American Child Hygiene Association, Washington, D. C., Oct. 12-14. Miss G. B. Knipp, 111 Cathedral St., Baltimore, Md., Secretary.

American Electro-Therapeutic Association, New York, Sept. 19-22. Dr. Richard Kovacs, 223 E. 68th St., New York, Registrar.

American Public Health Association, Cleveland, Ohio, Oct. 16-19. Mr. A. W. Hedrich, 370 Seventh Ave., New York, Secretary.

American Roentgen Ray Society, Los Angeles, Sept. 12-16. Dr. H. E. Potter, 122 S. Michigan Ave., Chicago, Secretary.

Association of Military Surgeons of the United States, Washington, D. C., Oct. 12-14. Col. James Robb Church, M. C., U. S. Army, Medical Museum and Library, Washington, D. C., Secretary.

Colorado State Medical Society, Colorado Springs, Oct. 3-5. Dr. F. B. Stephenson, Metropolitan Bldg., Denver, Secretary.

Delaware State Medical Society, Dover, Oct. 9-10. Dr. W. O. La Motte, Industrial Trust Building, Wilmington, Secretary.

Indiana State Medical Association, Muncie, Sept. 27-29. Dr. Charles N. Combs, Terre Haute, Secretary.

Kentucky State Medical Association, Paducah, Oct. 16-19. Dr. J. A. McCormack, 532 W. Main St., Louisville, Secretary.

Medical Association of the Southwest, Hot Springs, Ark., Oct. 4-6. Dr. W. H. Bailey, 115 West 21st Street, Oklahoma City, Okla., Sec'y.

Minnesota State Medical Association, Minneapolis, Oct. 12-13. Dr. Carl B. Drake, Central Bank Building, St. Paul, Secretary.

Mississippi Valley Medical Association, Rochester, Minn., Oct. 10-12. Dr. Henry Enos Tuley, 244 Francis Bldg., Louisville, Ky., Secretary.

Missouri Valley, Medical Society of the, St. Joseph, Mo., Sept. 21-22. Dr. Charles W. Fassett, 115 E. 31st St., Kansas City, Mo., Secretary.

Nevada State Medical Association, Reno, Oct. 6-7. Dr. Horace J. Brown, Goldfield, Secretary.

New England Surgical Society, Burlington, Vt., Sept. 22-23. Dr. P. E. Truesdale, 151 Rock Street, Fall River, Mass., Secretary.

Pennsylvania, Medical Society of the State of, Scranton, Oct. 2-5. Dr. W. F. Donaldson, Jenkins Arcade, Pittsburgh, Secretary.

Vermont State Medical Society, Burlington, Oct. 12-13. Dr. W. G. Ricker, St. Johnsbury, Secretary.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

July, 1922, **164**, No. 1

*Actions of Atropin and Quinidin in Fibrillation of Auricles; Clinical and Experimental Studies. T. Lewis, London, Eng.—p. 1.
*Phenomena of Raynaud's Disease. J. A. Buchanan, Rochester, Minn. —p. 14.
*Spleen and Digestion. Study II. Spleen and Pancreatic Secretion. W. DeP. Inlow, Rochester, Minn.—p. 29.
Surgical Aspects of Disease of Biliary Tract. A. O. Wilensky, New York.—p. 44.
*Etiology of Pneumonia. R. L. Cecil, New York.—p. 58.
*Introduction of Antimeningococcus Serum by Cistern Puncture. Report of Case of Meningococcus Meningitis in Infant Aged Four Months Cured by This Method. A. G. Mitchell and J. J. Reilly, Philadelphia. —p. 66.
*Case of Disseminated Gummatous Sporotrichosis, with Lung Metastasis. L. M. Warfield, Milwaukee.—p. 72.
*Comparative Prognosis in Tuberculous Lesions of Right and Left Lung. Study of 1,048 Cases. B. P. Stivelman and N. C. Miller, Bedford Hills, N. Y.—p. 82.
*Blood in Cases of Chronic Nephritis Associated with Nitrogen Retention. B. N. Berg, New York.—p. 88.
Present Status of Treatment of Hay-Fever and Asthma. A. Vander Veer, Jr., Albany.—p. 97.
*Syphilitic Backache. W. Thompson, Omaha.—p. 109.
*Incidence of Cecal Tuberculosis with Pulmonary Tuberculosis. I. H. Levy and H. H. Haft, Syracuse, N. Y.—p. 115.

Action of Quinidin in Auricular Fibrillation.—Lewis shows that quinidin reactions, notable as they are, are to be explained if it is assumed that circus movements have become established in the auricles. The way in which observation and theory harmonize is sufficiently remarkable; this accord affords strong circumstantial evidence that the theory of circus movement is sound. The reactions of the heart to quinidin test a theory which, if true, is of fundamental consequence to conceptions of disordered rhythm. They are severe tests; nevertheless, the theory still holds good. Let the final verdict in regard to the usefulness of quinidin in therapeutics be what it will, and the outlook is by no means unhopeful, Lewis believes that the new knowledge gained from its reactions, the new lines of research which they have suggested and will continue to suggest, are far from negligible. Quinidin is not only testing new current theories, but it is bringing valuable confirmation of older conclusions. One of the most striking of these is its final proof that fibrillation and flutter are fundamentally similar. Another incidental service which it is accomplishing is that it is confirming the analysis of those cases of fibrillation in which the ventricle beats slowly. These cases have been interpreted as instances of combined fibrillation and heart-block; quinidin clearly displays this block when it restores the normal rhythm. Quinidin is opening up many lines of original research.

Phenomena of Raynaud's Disease.—The histories of sixty-seven patients observed in the Mayo Clinic were studied by Buchanan; fifty of these were traced. The incidence of Raynaud's disease in relation to the total registrations of patients in the clinic each year varied from 0.012 to 0.026 per cent. It was not demonstrated that physical and nervous strain incident to any one type of occupation or social stratum was a cause of the condition. The duration of the disease was up to forty-five years. Sixty patients described the mode of onset as very sudden. There was nothing in the histories of the patients to indicate that the disturbances depended on a toxic process. Local hyperemia, with the other vasomotor phenomena of Raynaud's disease, was found in eight patients. The lesions were bilateral and symmetric in thirty-eight patients and asymmetric in twenty-nine. The systolic blood-pressure was within normal limits in forty-nine patients, above normal in eleven and below normal in seven. The diastolic blood-pressure was within normal limits in fourteen patients, above normal in thirty-three and below normal in twelve. The absence of a fixity of blood-pressure variations in a vasomotor disturbance coinsides with the experimental work of Krogh. The examination of the urine was negative in all cases. Hemoglobinuria was not observed in any case. The basic mechanism involved in the production of the symptoms manifested in Raynaud's disease, Buchanan says, remains obscure, but the phenomena observed coincide satisfactorily with the theoretic and experimental possibilities of a disturbance of the vasomotor apparatus. The attacks of syncope are no doubt constrictor, as the part or parts are partially or completely bloodless during the attacks. This is shown by the absence of hemorrhage on pin prick, and further by the total lack of color of the part and the lowered temperature. The asphyxial attacks are probably also constrictor and not dilator, as is commonly believed. The search for a tangible causative factor has been without results. It is not possible to attribute the condition to toxemia, as no possible toxic cause is visible. The infrequency of acute infections in the onset minimizes the importance of the ordinary type of infections as etiologic factors. Heredity plays no part. Whatever may be the causal agent, the method of its action seems in most cases to be peripheral on the vasomotor nerves rather than on the central mechanism, although it is possible that in certain cases both may be affected. Buchanan suggests that the term "Raynaud's disease" should be discarded and "local syncope of Raynaud," or "local asphyxia of Raynaud," or "gangrene of Raynaud" substituted.

Spleen and Pancreatic Secretion.—Data are given by Inlow concerning the pancreatic secretion, before and after splenectomy, on two dogs with permanent pancreatic fistulas secreting an inactive proteolytic juice; and on two similar non-splenectomized dogs serving as controls. Removal of the spleen in these instances caused no constant changes in the amount, enzyme content, or alkalinity of the pancreatic juice. It is concluded from a review of the literature and this experimental inquiry that a definite trypsinogenic function of the spleen has not been demonstrated.

Bacteriologic Nomenclature of Pneumonia.—In Cecil's opinion it would be a step in advance to speak less of lobar and bronchial pneumonia and more of pneumococcus, streptococcus and *Bacillus influenzae* pneumonia. Progress in the specific treatment of pneumonia is in large measure dependent on the adoption of such a point of view.

Antimeningococcus Serum Introduced by Cistern Puncture.—Mitchell and Reilly report a case of meningococcus meningitis in an infant aged 4 months cured by cistern puncture. As far as they have been able to ascertain, this is the first case of subarachnoid block due to the meningococcus which has been cured by this procedure.

Sporotrichosis with Lung Metastases.—A case of disseminated gummatous sporotrichosis in a young colored man is reported by Warfield. There was a nodule in the right lung, suspected on physical examination, seen in the roentgen-ray plate and confirmed at necropsy culturally and histologically. Warfield asserts that this is the first case of its kind reported in American literature. The sporotricha reported from American cases and some reported from French cases differ in the pathogenicity and in the ability to produce lung lesions in albino rats. Attention is called to sporotrichosis as a generalized disease and to the probability of cases of lung sporotrichosis which are unrecognized.

Prognosis of Right and Left Lung Tuberculosis.—The results of their study lead Stivelman and Miller to conclude that in early tuberculosis the right side is affected twice as often as the left. As the disease progresses there is a marked increase in the number of involvements of the left lung, so that in the advanced stage of the disease the right and the left lungs are numerically equally involved. Patients with a predominating left lung involvement are liable to run an active course more often than those with preponderating right-side lesions. In early phthisis the side of the lung involved has no definite relation to the general prognosis. In advanced phthisis the prognosis is distinctly less favorable in those with preponderating lesions of the left lung. The presence of but one interlobar fissure, moderate atelectasis and the evil effects of sinistracardia and retraction of the stomach are factors which contribute toward the greater

gravity of left lung lesions as compared to the right lung lesions.

Blood in Chronic Nephritis.—Berg asserts that severe anemia in chronic nephritis occurs principally in cases accompanied by nitrogen retention. The anemia is characterized by a high hemoglobin index, often more than one, with relatively slight morphologic changes in the erythrocytes. It therefore constitutes an additional form of anemia of the hyperchromic type. Edema bears no constant relation to the presence or absence of the anemia. The character of the anemia suggests profound alterations in the activity of the hematopoietic organs.

Syphilitic Backache.—Thompson records two cases in which severe backache was caused by a syphilitic spondylitis. The pathology is similar to syphilis of bone elsewhere in the body. The nervous manifestations depend on the part of the vertebral column involved and the extent of the morbid process. Syphilitic spondylitis presents no definite clinical picture, the diagnosis being made chiefly by (1) the roentgen ray, (2) evidence of syphilis elsewhere in the body, (3) the Wassermann test, and (4) the therapeutic test.

Incidence of Tuberculosis of Cecum.—Among eighty cases of pulmonary tuberculosis Levy and Haft found twelve showing a definite filling defect in the cecum or ascending colon. This sign is the most important roentgen-ray sign of cecal tuberculosis.

American Review of Tuberculosis, Baltimore

July, 1922, **6**, No. 5

Clinical and Roentgen-Ray Findings in Chests of Normal Children. H. K. Pancoast, Philadelphia, and F. H. Baetzer, Baltimore.—p. 331.
*Upper Respiratory Tract in Pulmonary Tuberculosis; with Special Reference to Laryngeal Tuberculosis: Clinical Study of 200 Cases. I. D. Bronfin and C. Markel, Edgewater, Colo.—p. 341.
Gastrotomy as Emergency and Therapeutic Measure in Laryngeal Tuberculosis with Extreme Dysphagia. S. Swezey and H. Freed, Denver.—p. 364.
Effect of Hydrogen Ion Concentration on Production of Carbon Dioxid by Tubercle Bacillus. M. M. Brooks, Washington, D. C.—p. 369.
*Four Cases of Pulmonary Abscess. R. H. Morgan, Mt. McGregor, N. Y.—p. 377.
*Case of Pulmonary Tuberculosis with Extensive Involvement Without Symptoms. I. S. Kahn, San Antonio, Texas.—p. 391.
Light Touch Palpation: Lung Changes Demonstrable by Superficial Skin Palpation. C. Jacobson, Chicago.—p. 394.
*Artificial Pneumothorax for Pulmonary Tuberculosis with Coexisting Diabetes of Unusual Onset: Report of Case. E. K. Geer, St. Paul.—p. 399.
*Cod Liver Oil in Treatment of Tuberculosis. H. E. Kirschner, Monrovia, Calif.—p. 401.
*Use of Calcium in Pulmonary Tuberculosis. T. J. Beasley, Indianapolis.—p. 407.
*Plaster Cast in Treatment of Pulmonary Tuberculosis. N. Levitt, Towson, Md.—p. 410.
Physiologic Adjuvant in Rest Cure of Pulmonary Tuberculosis. S. A. Knopf, New York City.—p. 417.

Upper Respiratory Tract in Pulmonary Tuberculosis.—The upper respiratory tract was studied by Bronfin and Markel in 200 tuberculous patients, in the moderately advanced or far advanced stages, with an average pulmonary duration of 507 years. Abnormalities of the nasopharynx were noted in 64 per cent. and nasal stenosis in 62 per cent., but the number of cases with positive laryngeal tuberculosis was not greater in those with nasal obstruction than in those with normal nasal chambers. Strophy of the nasal mucous membranes was not a frequent manifestation and seemed to have no definite relation to laryngeal tuberculosis. Definite pathologic changes of laryngeal lesion were of such a type as to warrant a positive clinical diagnosis of tuberculous laryngitis. Five positive cases had associated syphilis, two of which received specific treatment without any demonstrable effect on the laryngeal lesions and the other three presented the characteristic lesions of tuberculosis. In three cases the lesion was subacute and stationary and in the other two the lesion was chronic and stationary. The quickest and most satisfactory results were obtained with the cautery. All active throat cases under the different forms of treatment improved; 139 cases under no treatment improved or remained stationary; in eight cases the lesion became progressive.

Pulmonary Abscess.—The cases reported by Morgan were diagnosed either as probable or positive pulmonary tuberculosis. They are particularly interesting inasmuch as they represent three known or assumed causative factors and one entirely unknown. Two of the four cases were proved to be abscess at the necropsy table and one by the surgeon. The remaining case recovered without any surgical procedure. The two cases going to necropsy were treated by artificial collapse of the lung and demonstrated the probable danger of attempting such treatment except in the very early stages of the disease. All four cases were in men, and the abscesses were all located in the right lung: two in the upper and two in the lower lobe. The two fatal cases showed multiple abscesses at necropsy. In three the abscess or abscesses were situated close to the pleura. All showed a rather typical symptomatology (including repeated hemoptysis). One died from massive hemorrhage, one from rupture of the lung with pyopneumothorax and fatal bronchopneumonia, the surgical case is still under treatment and improving, and the remaining case recovered without surgery.

Extensive Pulmonary Tuberculosis Without Symptoms.—In Kahn's case the roentgen ray disclosed extensive involvement of both lungs, although the patient, a man, aged 28, was not at all sick and was free from symptoms. There was complete lack of clinical symptoms and physical signs indicative of disease activity. Under rest cure for two weeks there was no cough, expectoration or fever, and no râles detectable by almost daily chest examinations, so that the diagnosis of tuberculosis was even considered doubtful. The patient was transferred to an outdoor camp for another month for further observation and was given daily light exercise. He gained 20 pounds during these six weeks, but his condition otherwise remained unchanged without the slightest evidences of tuberculous activity. Then he contracted influenza. From the start he ran a high temperature and was decidedly sick. He began to cough almost at once, with profuse expectoration. Chest examination now revealed numerous subcrepitant and indeterminate râles over the entire left upper lobe, front and back. The sputum was markedly positive for tubercle bacilli on two occasions, thus ending all diagnostic questions.

Pneumothorax in Pulmonary Tuberculosis with Diabetes.—Geer reports two cases of pulmonary tuberculosis with coexistent diabetes in which pneumothorax was induced with no untoward effects which could be ascribed to the diabetes. The thoracentesis wounds healed promptly after each refill. In one of the cases the diabetes manifested itself several months after the onset of the pulmonary lesion.

Cod Liver Oil in Tuberculosis.—Kirschner asserts that cod liver oil aids in the absorption and deposit of calcium. There appear to be at least three good reasons for increasing the calcium content of the body in tuberculosis: First, to overcome the demineralization, which French writers have apparently demonstrated as taking place in tuberculosis, and thus restore the normal calcium balance to the system, a condition very essential to health. Second, to secure the deposit of calcium in tuberculous foci, in order to promote healing mechanically by inducing fibrosis, and also calcification of the lesion. Third, to stimulate phagocytosis. Nagai and Itol stated that following the administration of calcium chlorid leukocytes incorporate tubercle bacilli more readily and in larger numbers than if it is not given. They believe that this explains the good results which they have obtained in the treatment of certain cases of tuberculosis in the Tokio city poorhouse. Cod liver oil in the treatment of tuberculosis is valuable because: Its large amount of unsaturated fatty acids permits it to be almost entirely absorbed and thus furnishes a large amount of fat food. It promotes the absorption of other fats. It limits respiratory ventilation. It has a destructive action on the tubercle bacillus. It has a large fat soluble vitamin A content several hundred times that found in butter. It favors the absorption and deposit of calcium in the tissues. It is important that it should be given in sufficient doses and continued for a sufficiently long time.

Calcium in Tuberculosis.—Beasley combines calcium with cod liver oil in the treatment of pulmonary tuberculosis as an aid in conjunction with all of the established and recognized measures that have proved of value in the past.

Plaster Cast in Tuberculosis.—Acting on the principle of rest in the treatment of all the other diseases, Levitt applies the plaster cast to the chest in cases of pulmonary tuberculosis to rest the lungs if possible. A series of fifteen cases was selected, all but one being far advanced: one was moderately advanced. All had the advantage of the usual treatment of rest, fresh air, and nourishing food. They did not improve, however, but steadily lost ground, so that there was nothing to lose but all to gain in trying out this treatment. The immediate results after the cast is applied are lessened cough and expectoration, reduction of temperature, improved appetite, and disappearance of pains in the chest. The plaster cast was worn for a period, ranging from two to four months, steadily and without complaint. Of the fifteen cases, three were markedly improved; six were improved; and in six cases the condition remained unchanged.

Journal of Biological Chemistry, Baltimore

July, 1922, **53**, No. 1

Presence of Antineuritic Substance, Water-Soluble B, in Chlorophyll-Free Plants. C. R. Orton, E. V. McCollum and N. Simmonds, Baltimore.—p. 1.
Glacial Acetic Acid as a Solvent for Antineuritic Substance, Water-Soluble B. V. E. Levine, Omaha; E. V. McCollum and N. Simmonds, Baltimore.—p. 7.
Modification of Bell-Doisy Phosphate Method. A. P. Briggs, St. Louis.—p. 13.
Colorimetric Determination of Blood Chlorids. M. L. Isaacs, Cincinnati.—p. 17.
Dietary Factors Influencing Calcium Assimilation. II. Comparative Efficiency of Dry and Green Alfalfa in Maintaining Calcium and Phosphorus Equilibrium in Milking Cows. E. B. Hart, H. Steenbock and C. A. Hoppert, Madison, Wis.—p. 21.
Method for Preparation of Crystalline Oxyhemoglobin. M. Heidelberger, New York.—p. 31.
Growth and Reproduction on Simplified Food-Supply. II. Influence of Food on Mother and Young During Lactation Period. H. C. Sherman and M. Muhlfeld, New York.—p. 41.
Id. III. Efficiency of Growth as Influenced by Proportion of Milk in Diet. H. C. Sherman and J. Crocker, New York.—p. 49.
Estimation of Lipoid Phosphoric Acid ("Lecithin") in Blood by Application of Bell and Doisy Method for Phosphorus. F. S. Randles and A. Knudson, Albany, N. Y.—p. 53.
Buffer Systems of Blood Serum. E. A. Doisy, E. P. Eaton and K. S. Chouke, St. Louis.—p. 61.
*Studies on Enzyme Action. XV. Protease Actions of Malignant Human and Rat Tumor Extracts at Different Hydrogen Ion Concentrations and in Presence of Various Salts. K. G. Falk, H. M. Noyes and K. Sugiura, New York.—p. 75.
*Studies of Urinary Acidity. I. Some Effects of Drinking Large Amounts of Orange Juice and Sour Milk. N. R. Blatherwick and M. L. Long, Santa Barbara, Calif.—p. 103.
Fermentation of Hexoses and Related Compounds by Certain Pentose-Fermenting Bacteria. W. H. Patterson, E. B. Fred and J. A. Anderson, Madison, Wis.—p. 111.
Study of Acetone and Butyl Alcohol Fermentation of Various Carbohydrates. G. C. Robinson, Toronto, Can.—p. 125.
*Animal Calorimetry. 22nd Paper. Production of Fat From Protein. H. V. Atkinson, D. Rapport and G. Lusk, New York.—p. 155.
*Lipoids of Blood in Tuberculosis. B. H. Henning, Berkeley, Calif.—p. 167.
*Fat Excretion. E. Hill and W. R. Bloor, Berkeley, Calif.—p. 171.
Colorimetric Determination of Hemoglobin with Especial Reference to Production of Stable Standards. E. H. Terrill, St. Louis.—p. 179.
Fate of Certain Sulphur Compounds When Fed to Dog. C. L. A. Schmidt and G. W. Clark, Berkeley, Calif.—p. 193.
*Acetonuria of Diabetes. R. S. Hubbard and S. T. Nicholson, Jr., Clifton Springs, N. Y.—p. 209.

Proteose Actions of Malignant Human Tumor Extracts.—The proteolytic actions on casein and on peptone of extracts of malignant human tumors and of the Flexner-Jobling rat carcinoma were studied by Falk et al. by the Van Slyke aminonitrogen and the Sorensen formol methods at different hydrogen ion concentrations, in the presence of a number of neutral salts, for various lengths of time, and with various concentrations of enzyme and of substrate. Similar results were obtained with the extracts from the two sources. Optimum conditions for action were found at p_H 7.0. The general actions were similar to those of other protease preparations and could be formulated similarly. Tables and curves showing the retardations exerted by various neutral salts and by mixtures of several salts are given.

Effects of Drinking Large Amounts of Orange Juice on Urine Excretion.—Two young women were the subjects studied by Blatherwick and Long. They found that the drinking of large amounts of orange juice resulted in the production of alkaline urines, an increased organic acid excretion, and a decreased ammonia content of the urines. It was impossible to overreach the organism's ability to oxidize the contained citric acid even though the amounts drunk in one day were the equivalent of about 48 gm. of acid. The drinking of large amounts of lactic acid milk caused the formation of strongly acid urines. This increased acidity was shown to be due to the excretion of increased amounts of acid phosphate, as indicated by simultaneous increases in titratable acidity and phosphorus. The lactic acid appeared to have been completely oxidized or retained, as there was no change in the organic acid excretion.

Production of Fat from Protein.—When the glycogen reservoirs of the body are low, Atkinson et al. state, the ingestion of meat in large quantity results in the deposition of glycogen. The continued ingestion of much meat brings about the retention in the body of a pabulum consisting partly of fat. Only when meat in very great excess is given is fat alone retained. When a carbohydrate containing meal is given in the evening and 1,000 gm. of meat in the morning, then during the height of protein digestion the respiratory quotient indicates a production of fat from protein. Following the prolonged ingestion of meat in large amounts, which induces the retention of "deposit protein," the basal metabolism may rise from a former level of 16 calories per hour to one of 19.7, an increase of 23 per cent., from which level it slowly falls with the gradual elimination of "deposit protein."

Blood Lipoids in Tuberculosis.—Cholesterol was found by Henning to be uniformly low in tuberculous blood when determined by the saponification method, but normal when determined without saponification. The presence in the blood plasma in tuberculosis of a relatively large amount of an unknown substance which is probably closely related to cholesterol is thus indicated. Total fatty acid and lecithin were within the normal range of values for these substances. The "residual" fatty acid of the blood was high and since there was no lipemia the presence of other forms of fatty acid combination than those ordinarily present is suggested.

Fat Excretion.—When moderate amounts of fat are fed, the fat of the feces is largely independent of the diet, and in composition approaches that from a fat-free diet. The comparative constancy of composition of the feces fat favors the idea of a fat excretion from the intestine, but while an excretion is probable, it cannot be regarded as proven in view of the undetermined influence of lipoid from free cellular material. The feces fat cannot ordinarily be regarded as unabsorbed food fat and, therefore, feeding experiments as a test of the extent of utilization of food fat are of doubtful value unless account be taken of the amount and kind of fat which appears in the feces independently of the food.

Acetonuria of Diabetes.—A method is described by Hubbard and Nicholson for calculating a molecular ratio between ketogenic and antiketogenic compounds contained in the diet which is applicable to diabetic patients, and seven cases are described in which a comparison was made between the values of this ratio and the excretion of the acetone bodies in the urine. It is shown that the acetone excretion varies inversely with the numerical values of this ratio. A study of the numerical values of the ratio calculated for diets which correspond with a slightly increased excretion of acetone shows that they were approximately the same as those values found for normal subjects receiving diets low in carbohydrate, but containing sufficient calories to supply the needs of the subject. It is also shown that fat fed sometimes increases the amount of acetone excreted, even when the increase replaces a part of the fat which the body was probably withdrawing from its own reserve supplies of this material.

Mental Hygiene, New York

July, 1922, **6**, No. 3

Some Aspects of Mental Hygiene. E. F. Buzzard.—p. 449.
Habit Clinics for Children of the Pre-School Age. D. A. Thom, Boston.—p. 463.
Inauguration of State Wide Public School Mental Clinic in Massachusetts. W. E. Fernald.—p. 471.
Personality in Mental Defective; Method for Its Evaluation. H. W. Potter, New York.—p. 487.
Some Psychologic Mechanisms of Human Conduct. I. J. Sands, New York.—p. 498.

Internal Secretions and Home. E. D. Bond.—p. 522.
Problem of Mental Misfit in Industry. G. K. Pratt.—p. 526.
Psychiatric Work of New York Probation and Protective Association. A. T. Bingham, New York.—p. 539.
Social Analysis of Group of Psychoneurotic Ex-Service Men. G. Massonneau, New York.—p. 575.
Personnel Relations in State Hospitals. H. M. Pollock, New York.—p. 592.
Incidence of Insanity Among Jews. J. A. Goldberg, New Yok.—p. 598.
Study of Individuality. C. E. Nixon.—p. 603.

Philippine Islands Medical Association Journal, Manila

May-June, 1922, **2**, No. 3

Leukanemia; Report of Case. A. G. Sison and A. B. M. Sison.—p. 113.
Radium Therapy in Eye, Ear, Nose and Throat Work. R. Fernandez.—p. 116.
*Hemolytic Streptococci; Their Rôle in Puerperal Infection. G. Rustia.—p. 121.
Clinical Notes on Ear, Nose and Throat Cases in Dispensary of Philippine General Hospital. A. S. Fernando.—p. 125.
Protozoology; Its Place in Medical Curriculum. L. Leiva.—p. 129.

Streptococci in Puerperal Infections — The organisms found by Rustia in fifty cases of puerperal infection were: *Streptococcus pyogenes-hemolyticus,* twenty-eight times; *Sterptococcus infrequens-hemolyticus,* once; nonhemolytic streptococcus (not classified), five times; nonhemolytic *Streptococcus mitis,* once; nonhemolytic *Streptococcus ignavus,* twice; hemolytic streptococcus associated with *Staphylococcus aureus,* eight times; nonhemolytic streptococcus (not classified) with *Staphylococcus aureus,* once; nonhemolytic *Streptococcus fecalis* with *Staphylococcus aureus,* once, and *Staphylococcus aureus,* three times. The above results show that *Streptococcus pyogenes-hemolyticus,* either pure or associated with *Staphylococcus aureus,* is the most frequent cause of puerperal infection in the maternity ward of the Philippine General Hospital. Of the fifty cases of infection studied, twenty-nine pure strains of hemolytic streptococcus and eight strains associated with *Staphylococcus aureus* were isolated.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

Aug. 5, 1922, **2**, No. 3214

Alcohol as Beverage and Its Relation to Certain Social Problems. E. Mellanby.—p. 195.
Alcohol in Its Relation to Problems of Mental Disorders. F. W. Mott.—p. 199.
General Etiologic Factors in Alcoholic Psychoses. J. T. MacCurdy.—p. 204.

Aug. 12, 1922, **2**, No. 3215

Physician: Naturalist, Teacher, Benefactor. J. G. Kerr.—p. 241.
Alcohol as Beverage and Its Relation to Certain Social Problems. Alcohol and Industrial Efficiency. E. L. Collis.—p. 244.
Alcohol Restriction and Mortality. M. Hindhede.—p. 248.
Alcohol as a Beverage in Its Relation to Infantile Mortality. J. W. Ballantyne.—p. 252.
Alcohol as Selective Agent in Improvement of Racial Stock. C. R. Stockard.—p. 255.

Calcutta Medical Journal

June, 1922, **16**, No. 12

*Specific Gravity of Blood in Cholera. D. N. Banerji.—p. 459.
Social Environments and Other Causes Contributing to Spread of Tuberculosis in this Country. R. B. G. C. Chatterjee.—p. 468.
Case of Tetanus. —p. 475.
I. Puerperal Sepsis. H. Chatterjee.—p. 478.
II. Mineral Metabolism. Rate of Mineral Salts in Organism.—p. 480.

Specific Gravity of Blood in Cholera.—Banerji discusses the various methods for determining the specific gravity of blood as a guide to the treatment of cholera and describes his own method. The procedure is as follows: One ounce of saturated solution of magnesium sulphate is made. To 25 c.c. of water in a small vial, 6.25 c.c. of the saturated magnesium sulphate solution is added. The specific gravity of this solution will be 1.060 at body temperature. This vial is placed in water at a temperature of 98.4 F. and a drop of blood put into it. If it sinks, intravenous injection will be required; if it floats, no intravenous injection is required. If the drop sinks slowly, about 2 pints is required; if rapidly, about 4 pints, and if very rapidly, like lead, from 5 to 6 pints.

Irish Journal of Medical Science, Dublin

March, 1922, **5**, No. 1

Organization of Irish Medical Profession. T. Hennessy.—p. 5.
Transfusion of Blood. H. Stokes.—p. 18.
Blood Transfusion. G. E. Nesbitt.—p. 23.

July, 1922, **5**, No. 5

*Rotunda Lying-In Hospital Clinical Report of 1920-1921. G. Fitzgibbon, A. H. Davidson and J. S. Quin.—p. 193.

Obstetrics at Rotunda Hospital.—In the extern maternity of the Rotunda Hospital 1,726 women were attended during their confinements, 194 were cases of abortion or miscarriage. There were fourteen cases of placenta previa, three central; all were treated by bringing down a leg after version, when necessary, and then allowed to deliver themselves. Delivery was completed in from one to twenty-three hours and six infants were born alive. One mother died, a sesquipara. There were seven cases of accidental hemorrhage, one being concealed. Of the six external cases one was treated by rupture of the membranes and one by plugging of the vagina. The case of the concealed hemorrhage ended in death. One case of eclampsia was treated with recovery. One transverse case terminated by corpore conduplicato. There were nine deaths, two from puerperal sepsis, following easy normal deliveries in multiparas, and one from mitral disease of the heart, with marked failing compensation at the time of delivery. In the intern maternity 2,150 cases were admitted, fifty of these being abortions or miscarriages. Twelve deaths occurred, three of these were general conditions complicating pregnancy. The others were conditions arising from pregnancy or confinement. There were twelve cases of placenta praevia, central four, maginal five, and lateral three. One mother died. Seven children were born alive. There were seven cases of accidental antepartum hemorrhage. Two external were treated by rupturing the membranes. One delivered spontaneously was combined external and internal; this case and three others had profound albuminuria. There were fourteen cases in which excessive loss occurred during the third stage. In all, the bleeding began during the third stage, and in the majority was controlled by the removal of the placenta. None of the cases gave rise to more than temporary uneasiness. There were thirty-one cases of contracted pelvis. Fifteen cesarean sections were done, in thirteen the indication was contracted pelvis; one case had two previous sections on account of constriction of the upper part of the vagina, and one case was for posterior development following an interposition operation. Six of the patients had previous deliveries by section. In one case the operation was done for the fifth time, the patient's first delivery being after pubiotomy. Another patient had two deliveries by pubiotomy and one by cesarean, with three other pregnancies ending in placenta previa, miscarriage and prolapse of the cord. Nine cases had section performed for the first time, all but one for contracted pelvis. Pubiotomy was done three times. Labor was induced twenty-two times, five times for contracted pelvis with living children; all the others were for dead fetus, or moles. One case of rupture of the uterus occurred. It was treated by tampon in the rent and recovered. Sixteen cases of eclampsia were treated—four antepartum; two antepartum and during labor; two during labor; and seven postpartum, with one death. The treatment was by the Rotunda routine: gastric lavage and purgative by tube, copious rectal lavage, shortening of the second stage if necessary, submammary sodium bicarbonate solution or free ingestion of water and morphin. There were forty-four other cases with marked albuminuria and all the symptoms of eclampsia, except fits. Several of these had uterine hemorrhage but not enough to be classed under that heading, as the toxemia was the dominant condition. One case was associated with a hydatid mole, with history of thirty weeks' pregnancy. The morbidity for the year was 6.2 per cent. Hydatidiform mole was found in seven cases.

Lancet, London

Aug. 5, 1922, **2**, No. 5162

Normal Stomach. A. E. Barclay.—p. 261.
Plea for Study of Biology in Relation to Public-Health. A. K. Chalmers.—p. 265.

*Toxi-Infective Lesions in Central Nervous System. Influence of Disturbance of Sympathetic Mechanism on Their Localization. D. Orr and A. C. Sturrock.—p. 267.
*Case of Localized Suppurative Meningitis Over Motor Cortex. C. P. Symonds and W. H. Ogilvie.—p. 272.
Wassermann and Sigma Tests. W. T. Collier.—p. 274.
*Formalin Test for Syphilis: Some Conditions Controlling Gel Formation. A. G. Holborow.—p. 274.
Luminal. W. Johnson.—p. 275.
Case of Autosuggestion Blindness. K. Campbell.—p. 276.

Toxi-Infectious Lesions in Central Nervous System.—The active elaboration and secretion into the cerebrospinal fluid of lipoid substances in great quantity under the stimulus of acute general intoxication, and the parallel between this activity and the developmental phenomena described by Pelizzi, Orr and Sturrock believe, lead to a strong presumptive deduction that the secretion by the choroid plexus and the ependyma of the ventricles and the iter is of the greatest importance as an active defense measure against intoxication, as well as one destined for the purposes of regeneration and repair. Here are described lesions due to sympathetic division alone; lesions found when, after division of the cervical sympathetic, a general intoxication is produced, and the periarteritis in the head of the caudate nucleus and the lipoid secretion in the ventricles and choroid plexus.

Localized Suppurative Meningitis Over Motor Cortex.—The lesion in the case cited by Symonds and Ogilvie was a sharply localized patch of suppurative meningitis overlying the motor cortex, and separated by at least 2 inches of healthy tissues from the source of the organisms—i. e., the middle ear and mastoid process. The mastoid infection was in an early stage, and the obvious bone disease was only in that portion of the mastoid process farthest removed from the cranial cavity. From the surgical point of view, the chief interest lies in the question of the path by which the spread of infection had occurred. Three routes suggest themselves as possible: first, by the labyrinth and internal auditory meatus; secondly, by the diploe of the squamous temporal bone and the communications with the meningeal veins; and thirdly, direct spread through the subarachnoid space. The first two are definitely excluded. From the neurologic point of view, the main facts of interest in the early history of the case are the completeness and sudden onset of brachial monoplegia in relation to what must have been a quite superficial lesion of the cortex, and the absence at this early stage of focal epileptic attacks, which only supervened as a penultimate phase preceding the recovery of voluntary power. This progress, from complete paralysis, through a stage of epileptic attacks to recovery of voluntary power, is the exact reverse of that often seen in cases of progressive destruction of the motor cortex by a tumor of the meninges, in which the initial phase of epileptic seizures is gradually succeeded and replaced by paralysis. Taken in conjunction, the two observations lend support to the theory that the epileptic discharge is dependent on a condition of the motor nerve cells which lies at some particular point on the scale between the two extremes of normal activity and complete inexcitabiilty. In the case of a very rapidly progressive depression of function, such as occurred at the onset in the case recorded, this optimum point for an epileptic discharge may be passed before a seizure has time to mature. As far as they go, these observations support the beliefs expressed by Head that in the case of a lesion of the sensory cortex "the farther forward it lies within this region, the grosser and more extensive is the disturbance shown by the spatial tests," and that, when such disturbance exists, the ability to localize a spot touched is less severely affected than the discrimination of two compass points.

Nature and Value of Formol-Gel Test for Syphilis.—When serum forms a gel with liquor formaldehydi, Holborow says, it is due to the direct action of the reagent on serum albumin or serum globulin, or both, and not to any action on the toxins of *Spirochaeta pallida* direct. It is probable that acid protein produces a gel with formaldehyd and alkali protein does not. If formaldehyd forms a gel of human serum it is an indication of decreased alkalinity of that serum, but does not decide the cause of the decreased alkalinity. The evidence obtained by Holborow is, in his opinion, sufficiently adverse to regard the formaldehyd test with much reserve.

Medical Journal of Australia, Sydney

July 15, 1922, **2,** No. 3

Need for Antenatal Clinics. R. M. Allan.—p. 53.
Puerperal Mortality and Morbidity. E. S. Meyers.—p. 54.
Drug Treatment in Obstetrics. L. P. Winterbotham.—p. 56.
Sour Milk; "Russian Culture." F. Tidswell.—p. 58.
Myositis Among Papuan Natives. W. E. Giblin.—p. 60.
Diphtheria in Country. D. D. Browne.—p. 62.
*Three Cases of Lead Poisoning in Children. E. S. Littlejohn.—p. 63.
Chronic Intussusception of Appendix into Cecum. Hypernephroma of Kidney. P. L. Hipsley.—p. 65.

Lead Poisoning in Children.—The three cases cited by Littlejohn are examples of lead intoxication being caused by the repeated ingestion of small quantities of lead paint over a prolonged period. One little girl, aged 3 years, spent considerable time each day standing on a chair looking out of a window and had sucked and bitten most of the paint off the lower part of the window sash and frame. Another patient, a boy, aged 9, had been in the habit of playing with some pots of paint his father had in a shed, painting everything about and getting the paint all over his hands; also he was in the habit of biting his nails.

Bulletins de la Société Médicale des Hôpitaux, Paris

June 16, 1922, **46,** No. 21

Pneumoconiosis of One Apex plus Cancer. A. Cramer.—p. 926.
*Syphilis of the Lung. J. Lecaplain.—p. 930.
*Cancer of Lung. J. Rolland.—p. 939.
*Cancer of Vertebra. J. Sicard et al.—p. 943.
Simplified Apparatus for Artificial Pneumothorax. A. Jousset.—p. 951.

Pulmonary Syphilis.—In one of Lecaplain's two cases the lesion in the lung was a group of gummas, casting a shadow with a scalloped outline, while the clinical manifestations were those of unilateral pulmonary tuberculosis with cavities. In the other case there was a broad band of shadow across the lung, with four round deeper shadows in it. The clinical picture was that of sclerosis of bronchi and arteries. The anomalous physical findings and scars of syphilitic lesions, and the rapid recovery under specific treatment, confirmed the diagnosis.

Cancer of Lung.—The man of 55 had long had a cough, returning every winter, but in the last three years it had been more severe. The symptoms and roentgen findings finally indicated cancer of the lung. It retrogressed under deep roentgen-ray treatment, a total of 64 H. units. Percussion by the end of the second week gave approximately normal findings. As the large neoplasm melted away under treatment, the general condition grew worse and the man wasted away, dying in about a month after the conclusion of the treatment.

Vertebral Cancer.—Sicard reproduces some roentgenograms to illustrate the difference in the shadows cast by caries and cancer involving vertebrae. With Pott's disease the intervertebral disk is more or less destroyed, while, with cancer, the adjacent disks seem to be comparatively intact, and the body of the vertebra has more or less completely disappeared. He ascribes this noninvolvement of the disks to the poor provisions for circulation in them. The cancer cells are swept to better irrigated regions. In one of the three cases described, the cancer was anatomically verified, and the diagnosis has been confirmed by the course in the others.

June 23, 1922, **46,** No. 22

*Periglandular Plexus in Appendicitis. P. Masson.—p. 956.
Deforming Articular Rheumatism of Syphilitic Origin. H. Dufour and Geismar.—p. 970.
Progressive Lesion in Corpora Quadrigemina Region. G. Guillain and C. Kudelski.—p. 971.
*A Voluntary Fast. M. Labbé et al.—p. 975.
Obesity with High Blood Pressure. C. Aubertin.—p. 977.
*Suprarenal Tumor. M. Labbé et al.—p. 982.

Periglandular Plexus in Appendicitis.—Masson devotes fourteen pages to a description of the hypertrophied nerves and neuromas he has found in chronic appendicitis. These nerves contain cells which are not visible with the ordinary staining technic, but they show well with an ammoniacal solution of silver nitrate. He discusses the part played by these argentaffine cells in the production and preservation of the nerves. They seem to be homologous with the Kultschitzky cells of the intestines, and he presents evidence

which apparently classes them in an autochthonous system, possibly of endocrine nature.

Voluntary Fast.—The man of 42 is at the thirty-sixth day of his fast "undertaken without any pathologic condition to justify it, on the advice of an American book by Dr. Dewey." The fasting has induced pronounced acidosis, while the basal metabolism has dropped from 46.2 the fifth day of his fast to 21.6 the thirty-second day. There is dizziness, and the man has lost 15 pounds in weight. To all remonstrances he declares he is not going to eat until he feels hungry.

Solar Plexus Crises and Paroxysmal Hypertension with Suprarenal Tumor.—The young woman of 28 had paroxysms of a sensation of constriction in the epigastrium with vomiting and intense vasomotor disturbance, and the blood pressure fluctuated rapidly and in a wide range. There were two attacks of pulmonary edema, the second proving fatal. Necropsy revealed a large tumor in the left suprarenal medulla while the digestive and the cardiovascular apparatus were sound. The blood pressure ran up very high and declined, sometimes from one hour or day to another, this paroxysmal fluctuation reaching extremes beyond anything yet recorded.

Echo Médical du Nord, Lille

July 15, 1922, **26**, No. 28

*Effect of Suprarenalectomy on Nerves. E. Wertheimer et al.—p. 229.

Excitability of Splanchnic Nerve Fibers After Excision of Suprarenals.—The excision of suprarenals in dogs and cats by Wertheimer and Duvillier demonstrated that the splanchnic nerve fibers inhibiting intestinal contraction possess an excitability independent from the one conferred by epinephrin in the blood.

Paris Médical

July 8, 1922, **12**, No. 27

*Mercuric Chlorid Poisoning. C. Achard.—p. 33.
*The Reflexes in Localization of Spinal Cord Lesions. J. Lévy-Valensi.—p. 41.
*Intraspinal Treatment with Insoluble Salts. A. Carniol.—p. 44.
*Symptoms of Disease in Pituitary Body. J. Mouzon.—p. 47.

Mercuric Chlorid Poisoning.—Achard remarks in the course of this study of the lesions induced by mercuric chlorid that the injury of the kidneys does not attract the patient's attention as it is not painful. But it might be called the gravest element in the clinical picture. In a case described the urine was bloody by the fourth hour, and then there was no further secretion of urine. On account of the excessive losses of fluids and the difficulty in drinking, fluids must be supplied by the subcutaneous or rectal drip. In one case with recovery he had thus given a solution of sulphates and glucose. In a case reported by Milian, an injection of a strong solution of glucose was followed by restoration of kidney functioning. The glucose aids in nourishing the patient, and he says there need be no fear of edema in these cases.

The Reflexes in Localization of Spinal Cord Affections.—Valensi gives an illustrated description of the most instructive of the tendon and periosteal reflexes, and the best way to estimate minor differences in the responses.

Intraspinal Therapeutics.—Carniol remarks that therapeutics does not seem to have profited by the intraspinal route. He ascribes this to the difficulty of introducing an actually effectual dose of the drug on account of the fear of grave reactions. Another reason is the extreme shortness of the period of contact of the drug with the tissues, and a third reason is that the circulation of the blood in the meninges is almost entirely independent of the nerve substance. The drug injected passes at once through the vessels in the meninges into the general circulation. Absorption into the blood by the meninges is rapid and vigorous while the circulation of the cerebrospinal fluid is very slow, if there is any at all. The only means to insure the continued action of the drug injected intraspinally is to use a drug that is not absorbable. His experiments with dogs showed that insoluble salts were borne better than the soluble. This encouraged clinical trials, and calcium was tried in epilepsy and mercury in general paresis. The research was begun in 1916, and the epileptics who had been having from two to five seizures a day did not have any more for from five to eight days. After this the seizures returned, but much less frequent than before. They gradually grew more numerous until the former frequency had returned. No sedative action was observed in four women with chronic mania, which confirmed that the calcium ion acts only on the motor nerve substance. All he can say of his cases of general paresis is that the reaction was minimal to intraspinal injection of 0.005 and 0.007 gm. of mercury salicylate, and the calomel seemed to be borne even better.

Pituitary Syndromes.—This was the main subject discussed at the recent annual Réunion neurologique, and Mouzon epitomizes the trend of the discussion. It was mentioned in the Paris Letter of August 5, page 569. Béclère related that the first case he treated with radiotherapy dates from 1908. The giantism and obesity were clinically cured thereby, and this good result has persisted to date. A number of others reported successful treatment by radiotherapy of headache, and of ocular and sometimes even of genital disturbances. Sainton reported the necropsy findings showing the atrophy of a pituitary tumor twelve years after the symptoms from the tumor in the pituitary body had been arrested by radiotherapy, with restoration of the earning capacity. The tumor at necropsy still weighed 60 gm. Treatment by injection of pituitary extract has yielded the most decisive results in diabetes insipidus. This result is not constant, but is usually realized, with remarkable promptness and efficacy. The extract is destroyed by the digestive juices when given by mouth, but Cushing has used it successfully by instillation in the nose.

Presse Médicale, Paris

June 17, 1922, **30**, No. 48

*Decortication of Lung in Chronic Pleurisy. C. Lenormant.—p. 517.
*Radiotherapy in Psychiatry. P. Daday, R. Bessière and L. Jaloustre.—p. 520.
Ethylhydrocuprein in Pneumonia. L. Cheinisse.—p. 522.

Decortication of Lung for Chronic Pleurisy with Fistula.—Lenormant urges to operate early, to disinfect the pleura as much as possible beforehand, draining thoroughly, perhaps rinsing out the cavity, and flushing with oxygen. All advise against operating when there is fever. He urges reducing the mutilation of the chest wall to the minimum. Incising an intercostal space its entire length and resecting at most one or two ribs generally gives as ample access as turning back a flap, provided automatic retractors and a head lamp are used. Donati carries the incision up along the sternum and divides the ribs. They are so elastic that they can be pried up without resecting. Roux-Berger advises to divide the rib just above the long incision in the intercostal space, severing the rib at each end. After finishing the decortication it is advisable to fasten the lung to the wall to prevent its collapse and arrest hemorrhage. Five cases are described, all completely successful, and the excellent results reported by others are cited. Duvergey has published forty-eight cases with recovery of all but one patient who succumbed to pneumonia. Mathieu thus cured in two and a half months a pleural fistula of six years' standing.

Thorium X in Treatment of Mental Disease.—Five weekly subcutaneous injections were made and then a second series after a month's interval. The sixteen patients were under treatment for melancholia, dementia praecox or mental confusion. No effect was apparent in the majority, but one young man with incipient dementia praecox, apparently drifting into the chronic stage, improved so much that he left the asylum clinically cured after five injections of the thorium X. In two cases of mental confusion in women of 51 and 32, the improvement was so rapid and direct that the influence of the thorium X seemed to be unmistakable. The authors are the medical director and physician in chief of the Evreux asylum. The first published attempt to apply radioactivity in treatment of acute psychoses dates from 1913.

Schweizerische medizinische Wochenschrift, Basel

June 22, 1922, **52**, No. 25

Single Expcsure Roentgen Treatment of Myomas. M. Steiger.—p. 625.
Etiology of Endemic Goiter. F. M. Messerli.—p. 631. Cont'd.
*Parotitis in the Insane. L. Redalié.—p. 634.

Parotitis in the Insane.—In Redalié's five cases in this group, the refusal of the insane patients to eat, or even drink

water, was evidently responsible for the parotitis. It subsided without suppuration in two of the cases, and the outcome was favorable in all.

June 29, 1922, **52**, No. 26

Squill in Treatment of Heart Disease. R. Massini.—p. 645.
*"Catching Cold." M. Gähwyler.—p. 648.
Potter-Bücky Diaphragm in Roentgen Diagnosis. J. Iten.—p. 654.
Etiology of Endemic Goiter. F. M. Messerli.—p. 656. Conc'n.

"Colds."—Gähwyler reviews the numerous experiments on animals and the experiences with troops in the war in regard to "catching cold." Schade compared the army records in Prussia from 1901 to 1912, embracing over half a million men each year. The connection between getting chilled and development of catarrhal affections afterward was abundantly proven. Yet the mere temperature alone does not explain the connection; the men in the trenches and the Arctic explorers did not "catch cold," but they became subject to "colds," like other people, on return to an indoor life. Gähwyler remarks that the skin of animals differs so completely from human skin that no conclusions can be drawn from one for the other, and human susceptibility varies widely in different persons and families. Chodounsky, for example, could take a hot bath and then sit naked in a cold draft for an hour without "catching cold." Runge, on the other hand, developed rheumatism every time he leaned against a cold wall when heated. Among the theories advanced to explain "catching cold" is that the cold draft chills the blood, and that the chilled blood injures the internal organs. Chilling of the surface induces hyperemia in mucous membranes. The mucosa in the nose and throat may grow red under the influence of chilling of the feet. But no one knows why this active hyperemia in the mucosa predisposes to "catching cold." One would think that it would have the opposite effect, protecting against "catching cold." Ruhemann insists that the cold and wet rouse the saprophytes to virulence: Prolonged lack of sunshine rouses the slumbering bacteria, and the micro-organisms of catarrh and rheumatism become actively aggressive. This theory seems to be disproved by the fact that "colds" develop in the sunny south fully as often as in bleak northern weather. Schade explains the effect of chilling as tending to gel the colloids in the protoplasm. Any change in the colloid condition, no matter how transient, must upset the normal processes more or less. This "gelosis" from the action of cold can be felt in the stiffness in the face and hands after brief exposure to severe cold, and he thinks similar changes may occur in internal tissues and may modify the defensive forces and entail "catching cold." This theory deserves consideration, but neither this nor any other theory satisfactorily explains the origin of "colds." They have a three-pronged root: a local or general predisposition to chilling; an opportunity for chilling some susceptible portion of the body; and an infectious process which develops in the tissues modified by the effect of the chilling. The predisposition seems to be entailed more by indoor life than by exposure to weather. He adds that it is futile to try to "harden" certain families. They are constitutionally predisposed to "colds" and there is no help for them except in warding off opportunities. Cold baths are contraindicated in scrofula, tuberculosis and asthma, and children in lymphatic, rheumatic and neuropathic families should be given cold baths very cautiously, if at all. Deep breathing exercises, he adds, may do harm by drawing dust and bacteria into the lungs. The tendency to repeated "colds" may be the first sign of infection with tuberculosis. In sanatoriums, reclining out of doors should be tempered for the anemic, rheumatic and catarrhal patients. Open windows at night may maintain a persisting "cold" in the tuberculous. In any event, a tuberculous patient with a "cold" should be kept in a warm room the same as for a "cold" in the nontuberculous. For the weakly, he says, cool air seems to be a poison for catarrhal conditions in the upper air passages. The tissues are left sensitive and prone to recurrence, and the weakly child allowed to go out on a sunny winter or spring day before he has recovered entirely is liable to react with a chronic catarrhal bronchitis. Children who react in this way, with exacerbation of the bronchial catarrh every time they are allowed to go out of doors, must stay indoors in an even temperature. It is difficult to decide sometimes whether too much coddling or a substandard constitution or other factor is responsible, but one thing is certain, that an indoor life is bad for both man and animals. In treatment, the vigorous may throw off a cold by any means to stimulate the circulation and sweat glands, or by "protoplasm activation" with iodin. Fink ascribes a specific action to iodin if taken in time: 8 or 10 drops of a 1 per cent. aqueous solution twice a day, fasting. But the weakly cannot throw off the "cold"; it works inevitably downward.

Pediatria, Naples

July 1, 1922, **30**, No. 13

*Addison's Disease in Infant. S. Cannata.—p. 585.
*Habitual Vomiting in Infants. A. Medi.—p. 591.
*Abscess in Spleen in Child of Six. L. La Ferla.—p. 598.
*Puncture of Spleen and Bone Marrow. G. Caronia.—p. 607.

Addison's Disease in Infant.—The infant of 16 months gave a positive response to the tuberculin test in addition to the pigmentation and other symptoms, asthenia and low blood pressure, characteristic of Addison's disease. He has found only two cases in infants on record. The asthenia in Cannata's case showed marked improvement while the infant was under observation, but the pigmentation continued a progressive course. The regions exposed to the light were affected least. There was no inherited taint, and the child had been breast fed. It had been healthy until the age of 13 months when chronic bronchitis developed, and the Addison symptoms soon followed.

Habitual Vomiting of Infants.—Medi thinks that hyperacidity is often a factor in the habitual vomiting. The seven cases he describes were cured by treatment on this basis. He ordered an alkaline potion to be taken after each feeding, with heat applied to the stomach.

Abscess in the Spleen.—The retrospective diagnosis in La Ferla's case explained the sequence of events as diplococcus infection, inducing the abscess in the spleen which took two years to develop toward the surface. The spleen in the meanwhile had become enormously enlarged in the girl of 6. He cites a similar course in a case reported by Black in a young man. In both cases incision of the abscess at the end of two years released pus and fragments of necrotic spleen tissue, followed by recovery.

Puncture of Spleen and Bone Marrow.—Caronia advises puncture of the bone marrow to start with. If this does not give sufficient information, then puncture of the spleen can supplement it. The danger with the latter is grave hemorrhage, from a hemophilic tendency, or laceration of the parenchyma. Leishmaniasis and chronic blood diseases induce a slight hemophilic tendency which enhances this danger. He uses a No. 12 needle, 7 or 8 cm. long, and pushes it through the skin, the patient lying supine, the trunk slanting from left to right, the needle held perpendicular to the skin. Once through the skin, he waits a few moments and then pushes it rapidly into the spleen. The advantage of puncturing the bone marrow is the absolute harmlessness of the measure. The disadvantages are the difficulty of piercing the hard bone and the scanty number of parasites in the bone marrow compared to the spleen. Pianese punctures with a Potain trocar in the superior epiphysis of the tibia or the inferior of the femur, and aspirates with the Potain pump. Caronia prefers to use a Weintraud needle No. 1, 3 or 4 cm. long. His illustrations show the needles, etc., in natural size.

Policlinico, Rome

July 3, 1922, **29**, No. 27

Latent Meningism in Malaria. L. Villa.—p. 869.
Arneth Blood Count in Pulmonary Tuberculosis. O. Calamita.—p. 875.
Operative Treatment of Appendicitis. R. Mosti.—p. 881.

July 10, 1922, **29**, No. 28

Ptosis of the Spleen. P. Pacchini.—p. 905.
Hernia of Diverticulum. G. Morici.—p. 908.
Thick Film Blood Test in Malaria. G. Bini.—p. 913.

July 17, 1922, **29**, No. 29

Abortive Treatment of Syphilis. P. Pediconi.—p. 937.
Case of Astasia-Abasia. P. F. Zuccola.—p. 943.
Voluntary Diplopia. O. Balduzzi.—p. 946.
Papain Extraction. G. Provera.—p. 947.

June 1, 1922, **29**, Medical Section No. 6

*Myxedema with Pluriglandular Dystrophia. E. Trenti.—p. 307.
Vital Staining of Blood-Producing Organs. A. Ciminata.—p. 319.
Blood Corpuscles During Venous Stasis. G. Aiello.—p. 330.
*Case of Chronic Leukemia. A. Ricci.—p. 339.

Pluriglandular Dystrophia.—The man had reached the age of 33 apparently entirely healthy, but then symptoms of thyroid and suprarenal insufficiency developed, with others confirming the pluriglandular dystrophia.

Chronic Leukemia.—The case described was distinguished by the number of giant cells in the blood stream, and of the blood platelets and granulated cells. The bone marrow had returned completely to the embryonal type, while the enlarged spleen had become transformed into myeloid tissue without megakaryocytes.

Brazil-Medico, Rio de Janeiro

April 22, 1922, **1**, No. 16

Bismuth in Treatment of Syphilis, etc. Astrogildo Machado and A. E. Aréa Leite.—p. 195.
*Meningo-Encephalocele. P. Palermo.—p. 198.

Meningo-Encephalocele.—The tumor was as large as the new-born child's head, and by the end of a month it measured 10 cm. more than the head in circumference. The cephalic spina bifida was in the lambdoid region, and the tumor was successfully removed. The pedicle was 13 cm. in circumference, and the gap left by its removal was covered with bone flaps taken from the neighborhood by splitting the bone. As the fontanel protruded the tenth day, and Palermo feared hydrocephalus, he had fifteen mercurial innunctions made, and the child has developed normally since.

May 20, 1922, **1**, No. 20

Roger's Disease; Two Cases. R. S. Teixeira Mendes.—p. 253.
Ultraviolet Rays in Dermatology. Damasceno Carvalho.—p. 255.
Helminthologic Notes. L. Travassos.—p. 256.

May 27, 1922, **1**, No. 21

Flagellate Parasites. M. Marques de Cunha and Julio Muniz.—p. 267.
Models for Public Health Work. G. Lessa.—p. 268.
Neurology in France in 1921. Thiers.—p. 272.

June 10, 1922, **1**, No. 23

*Bacteriophagia. J. Lemos Monteiro.—p. 297.
Medicine in the United States. Oscar Clark.—p. 301. Cont'd.
Bismuth in Treatment of Syphilis. U. Paranhos.—p. 311.

Bacteriophagia.—Lemos Monteiro reports the d'Herelle phenomenon as observed serially in old gelose cultures of the dysentery, anthrax and plague bacilli.

Gaceta Médica de Caracas

April 30, 1922, **29**, No. 8

*The Bradycardia of Infectious Diseases. L. Razetti and Villegas Ruiz.—p. 92.
*Traumatic Arterial Thrombosis. D. Luciani.—p. 96. Idem. D. Lobo.—p. 101.

Bradycardia in Acute Infectious Diseases.—Villegas Ruiz noticed that his patients with influenza or yellow fever who presented bradycardia all recovered, while all died of those with tachycardia. He queries whether the bradycardia can be accepted as indicating a favorable prognosis, but Razetti protests against this assumption. He says that bradycardia is usually transient and harmless, but it may entail permanent injury, and exceptionally may prove fatal. He ascribes it to toxic action on the bundle of His.

Traumatic Arterial Thrombosis.—Luciani refers to primary thrombosis from injury of the inner layers of the vessel wall from contusion or other trauma at the spot or at some distance. He describes a case of a revolver wound of the hand and thigh. There was no external hemorrhage or fracture, and the small bullet was found close to the skin in the trochanter region. In an hour no pulse could be felt in the femoral or popliteal artery, and the pain was intense, compelling morphin the first night. Ischemic necrobiosis developed in the leg, which had to be amputated in the lower third of the thigh by the end of the week. This case teaches the possible gravity of these civilian wounds: within an hour the obstruction was complete. This was particularly remarkable on account of the small size of the bullet, 9 mm., in comparison with the large size of the femoral artery. The collateral circulation can be depended on in the arm much better than in the leg. Experience has not realized the hopes from arteriotomy; Luciani says he does not know of a single successful case of this kind. The reason is obvious: As the lesion of the artery wall persists, the thrombus forms again when the clot is removed, for the same reason it formed in the first place. Abadie and Mathelin have reported two cases successfully treated by direct massage of the artery, but this exposes to danger of embolism. The logical treatment of traumatic thrombosis is to resect the segment of the artery involved. If this is of any extent, nothing but grafting will bridge the gap. Sencert has thus restored the permeability of the artery in dogs, implanting in the carotid artery a segment of the same artery taken from another dog and kept in alcohol for a few weeks.

Prensa Médica Argentina, Buenos Aires

June 30, 1922, **9**, No. 3

*Squamous-Zygomatic Mastoiditis. A. Tarasido.—p. 77.
*Hemoclastic Crisis in Children. F. Bazán.—p. 81. Conc'n.
Combination of Prisms. E. Dameno.—p. 84.
*Blood Pressure with Incipient Phlebitis. A. Navarro.—p. 87.
Autohemotherapy in Serum Sickness. A. A. Cetrángolo.—p. 89.

Paramastoiditis.—Tarasido declares that the process and the symptoms of involvement of the temporal bone in mastoiditis are so characteristic and differ so much from ordinary mastoiditis that it deserves separate consideration. The squamous-zygoma region may even be involved without manifestations of mastoiditis. The ordinary incision for the latter has to be carried farther, curving up around the ear, and antrotomy is the first step. Three cases are described.

Hemoclastic Crisis in Children.—Bazán was impressed with the parallel findings in the urine and the hemoclastic crisis findings in the 26 cases studied. In the 14 negative cases the urine was normal in 78 per cent. Even in the 16 positive cases the urine was normal in 5, demonstrating that the hemoclastic crisis was a more sensitive index of disease in the liver than any of the urine tests. It was positive in every case of known liver disease. The drop in the leukocytes is not so pronounced in children as in adults, a difference of only from 500 to 2,000. In dubious cases, a coincident drop in the blood pressure is instructive.

Early Diagnosis of Phlebitis.—Navarro reports a case of typhoid in which the man seemed to be doing well when a sudden and pronounced fall in the blood pressure attracted attention. Nothing could be found to explain it, but the second night acute pain in the right groin heralded the onset of femoral phlebitis. He thinks there can be no question that a drop in the blood pressure and the tonus of the vessels was the main factor in the thrombosis. The latter is never observed with a high blood pressure, he says. The blood pressure in typhoid is lower than in any other acute disease. Hence, he continues, by recording the blood pressure we can detect the onset or exacerbation of sudden vagotonia, which modifies the vessel walls, reduces the blood pressure and alters the blood—all of which tends to induce thrombosis. By supervising the vegetative system in patients liable to develop phlebitis we can thus ward off phlebitis, as we have twenty-four hours of warning.

Semana Médica, Buenos Aires

May 18, 1922, **1**, No. 20

The Circulation in Children. A. Casaubon.—p. 790.
*Cesarean Section. E. A. Boero.—p. 794.
*Correction of Balanic Hypospadias. J. Salleras.—p. 797.
Treatment of Syphilis with a French Arsenical. J. A. Ortiz.—p. 798.
*Hexamethylenamin in Typhoid. L. Ymaz.—p. 807.
*Heredity in the Human Species. V. Delfino.—p. 809.
Acute Lymphatic Leukemia in Child. J. B. de Quirós.—p. 811.

Cesarean Section.—Boero compares the different technics and the indications for them according as the cesarean section is required for a temporary or a permanent incapacity for natural delivery. The classic abdominal cesarean section, done early, preserves both mother and child, and respects the physiology of the uterus. Done late, it compromises and deranges the functions of the uterus. He has never known an instance of a late cesarean section—whatever the technic employed—in which there was not some mishap seriously compromising the future functioning of the uterus. By "late" he means several hours after rupture of the membranes, or after repeated internal examination. The classic incision in

the body of the uterus does not require instruments to extract the fetus. The tissues here are so elastic that a small incision is enough; the scar heals firmly, and the region of the scar has no intimate connection with other organs.

Balanic Hypospadias.—Salleras describes another case treated by Cathelin's method, saying that few simple operations give such satisfactory results as this. The skin flap from around the abnormal meatus is turned over, the skin side inside, to make the new lower end of the urethra in its normal place.

Hexamethylenamin in Typhoid.—Ymaz recalls the curious property of this drug that the osmotic tension of its solutions cannot be compared with that of the blood serum. By dissolving it in a 4 per thousand solution of sodium chlorid, the hexamethylenamin can be used up to 40 per cent. without destruction of the erythrocytes. About 30 per cent. seems the optimum: 30 gm. of the hexamethylenamin in 100 c.c. of the 4 per thousand solution of sodium chlorid. The dose for intravenous injection is 5 or 10 c.c.

Heredity.—Delfino summarizes some recent publications on the working out of the mendelian laws in the human race.

Deutsche medizinische Wochenschrift, Berlin

June 23, 1922, **48**, No. 25

*Serodiagnosis of Syphilis by Flocculation. C. Bruck.—p. 825.
Effect of Mineral Water on Carbohydrate Metabolism. Mayer.—p. 827.
Intravenous Application of Cinchophen. B. Mendel.—p. 829.
Effect of Procain on the Tone of Skeletal Muscle. S. de Boer.—p. 831.
The Constitution in Relation to Surgery. K. H. Bauer.—p. 833.
Effect of Iron and Arsenic on Blood Formation. F. Müller.—p. 836.
Treatment of Varicose Veins and Sequels. I. Voeckler.—p. 837.
Injury of Vaginal Fornix in Attempt at Abortion. Schultze.—p. 839.
A Standard Color Chart for Recording, by Comparison, Varying Tints of the Human Skin. L. Freund and E. Valenta.—p. 839.
Mouth Breathing. B. Alexander.—p. 840.
*Treatment of Singultus. Heermann.—p. 841.
Diseases of the Male Genitalia. G. Ledderhose.—p. 841.

Serodiagnosis of Syphilis by Flocculation.—Bruck describes the technic of his flocculation test for syphilis and gives comparative results in 1,500 cases. Leaving the weakly positive differences out of account, there was complete agreement between the results of the Wassermann and the Bruck tests in 98.6 per cent. of the cases. As some of the advantages of his test over other flocculation tests, he states that: 1. It is carried out with the same, constant extract suspension, without special additions, so that the results are not affected by the accidents arising from the necessity of preparing new dilutions. 2. An incubation cabinet and special optical methods (agglutinoscope) are superfluous. 3. As there is no necessity of long incubation or keeping the serums at room temperature, the danger of nonspecific flocculations is avoided. 4. The technic is exceedingly simple and the reaction is prompt. The results are brought out sharply and—aside from the time required for inactivation—the result is obtained in less than half an hour.

Maneuver for the Cure of Singultus.—Heermann applies the thumbs beneath the costal arches of the patient, draws them apart somewhat and at the same time stretches the diaphragm. The hiccup ceases at once, even in stubborn cases.

Medizinische Klinik, Berlin

June 25, 1922, **18**, No. 26

*Radiotherapy of Uterine Cancer and Dysmenorrhea. O. v. Franqué.—p. 817.
*Influence of War on Gynecology and Obstetrics. A. Mayer.—p. 820. Conc'n.
*Spontaneous Cure of Syphilis. F. Lesser.—p. 824.
*Thrush Fungus in Gastric Ulcer. K. Cafasso.—p. 828.
*Red Noses. E. Saalfeld.—p. 830.
Ambulatory Treatment of Gonorrhea in Women. N. Cassel and L. Lilienthal.—p. 831.
*Dextrose by the Rectum. Varela and Rubino.—p. 831.
Hydrotherapy and Obesity. E. Tobias.—p. 833.
Present Status of Puberty Gland Question. Hart.—p. 836. Conc'n No. 27.

Radiotherapy of Uterine Cancer and Dysmenorrhea.—This is a graduate lecture which Franqué begins by saying that the prospect of a cure of uterine cancer seems to have grown worse instead of better in the last few years. The proportion of inoperable cases in Winter's experience, for example, was 34 per cent. in 1911 and 72.2 per cent. in 1920. His own figures are 30.4 per cent. in 1915 and 68 per cent. in the last half of 1921. The consensus of the German gynecologists in May, 1920, was to the effect that the 47 per cent. cured for five years after operative treatment could not be equaled by radiotherapy. In 150 reports from various clinics the highest proportion of five year cures with either radium or roentgen treatment or both averaged only 25 per cent. Kehrer's figures were the highest, 45.4 per cent., and this was with radium alone. The association of roentgen rays with the newer technic has not yet had the five year test. On the other hand, radium has proved impracticable for treatment of recurrence, on account of the danger of bladder and rectum fistulas, while roentgen irradiation after the abdominal radical operation has given 50 per cent. permanent cures, in contrast to the 45 per cent. without the prophylactic irradiation. Bumm's figures after four years are, respectively, 71.8 and 35.7 per cent. On the whole, Franqué remarks, operative treatment and radiotherapy are equally well justified. The decision should be made after consulting with the family physician. If Franqué had known, for instance, that a patient in a fatal operative case described had lost large amounts of blood and had had several syncopes, this would have turned the scale in favor of radiotherapy. It is important to arrange the radiotherapy to complete the course while the patients are in the hospital; it is so difficult to get them to return later. Cancer of the body of the uterus is much more promising for treatment. He has had 80 per cent. cured for five to eight years, and the operability averaged 93 per cent. Roentgen-ray treatment of myomas was followed by malignant degeneration in only one of his 200 cases; he thinks that the roentgen treatment rather tends to ward off cancer.

Gynecology and Obstetrics During the War.—Mayer's article was summarized on page 596.

Spontaneous Cure of Syphilis.—Lesser denounces preventive mercurial treatment of syphilis as overestimated, declaring that it has no scientific basis, and the serologic tests, the spirochete findings in general paresis, and the lack of reinfections all show that it does not realize a biologic cure; it has merely a symptomatic action, reenforcing the organism in its spontaneous cure. No more than potassium iodid, has it any action on the spirochetes. Air and light baths, sweating procedures and courses of massage should be used more freely in treatment of syphilis, he says, possibly also shock therapy—all to promote the "self-healing" of the disease.

Thrush Fungus in Gastric Ulcer.—Cafasso examined the gastric contents from 122 persons, including thirty-four with ulcers. In over 50 per cent. of this latter group the oidium was found, confirming Askanazy's statements. It was most common in the cases with stenosis, and was rarely found with cancer.

Red Noses.—Saalfeld reviews the different measures advisable for acne rosacea, rosacea, rhinophyma and other forms of red noses. When the redness is transient, on entering a warm room, or after a hot drink or liquor, it may be banished for several hours by laying on the nose for a few seconds a compress dipped in benzin. Measures to induce peeling or actual decortication or quartz lamp treatment are among those described.

The Sugar Content of the Blood After Dextrose Enemas.—Varela and Rubino injected into the rectum 100 or 200 gm. of a strong solution of dextrose, giving it by rectal drip in the lower part of the ampulla. They tested the sugar content of the blood and urine every hour. In their seventeen tests the sugar content of the blood kept within normal range, but in seven cases there was decided glycosuria for up to seven hours. In one case it totaled 4.6 gm. This is in marked contrast, they say, to the findings when dextrose is given by the mouth; the blood sugar runs up then by 100 per cent. or more, while there is no glycosuria. They ascribe this to the fact that the dextrose, as they gave it by the rectum, was absorbed directly into the blood without passing through the liver. It thus acted like a foreign substance and was cast off by the kidneys. When it passes through the liver, it becomes modified in some way that adapts it as part of the organism, and when it reaches the kidneys these organs do not cast it off. This assumption credits a new function to the liver, the transformation of dextrose in this way.

Münchener medizinische Wochenschrift, Munich

April 14, 1922, **69**, No. 15

*Diagnostic Value of Gastroscopy. R. Schindler.—p. 535.
Causal Psychotherapy in Neuroses of Organs. K. Westphal.—p. 537.
Relation of Bronchial Asthma to Other Diseases. Kämmerer.—p. 542.
Response of Capillaries to Light as Roentgen Unit. Welsch.—p. 546.
Treatment of Syphilis with Bismuth. H. Müller.—p. 547.
Congenital Syphilis. G. Stümpke.—p. 551.
Marked Eosinophilia with Tumors. F. Schellong.—p. 553.
Pneumothorax in Relation to Altitude. F. Petz.—p. 554.
Pneumography with Obstruction of Spinal Canal. Josefson.—p. 555.
A Simple Colorimeter for Clinical Purposes. J. de Haan.—p. 555.
Diagnosis of Pernicious Anemia. P. Morawitz.—p. 557.
Present Status of Knowledge of Muscle Tonus. P. Martini.—p. 558.

The **Diagnostic Value of Gastroscopy.**—Schindler thinks that gastroscopy is destined to change markedly the fundamental conceptions in regard to the pathogenesis, clinical aspects and treatment of diseases of the stomach. Many disease conditions that heretofore have not been clinically diagnosticable can now be recognized and brought under rational treatment. Gastroscopy is, to be sure, the most difficult form of endoscopy, but it requires only a little practice and technical skill to learn it. His researches were made with the Elsner endoscope, which he found excellent but was able to modify to advantage in some particulars. By far the greatest difficulty lies in the correct interpretation of the pictures thus secured. The operator must have a thorough knowledge of pathologic anatomy. If the contraindications are strictly observed, the use of the rigid type of instrument is not dangerous for the patient. Most patients do not complain much of the disagreeable features of gastroscopy, many declaring that it is less obnoxious than the stomach tube. This paradox is explained by the perfect anesthesia required for gastroscopy. It makes possible certain differential diagnoses that could not be reached in any other way; for example, the various forms of chronic gastritis. For the recognition of gastric ulcer this form of endoscopy is indispensable. The early diagnosis of carcinoma will be advanced most decidedly if patients (especially those over 35 years of age) who complain of gastric symptoms and loss of weight are subjected promptly to a gastroscopic examination. Schindler gives many interesting details in regard to his gastroscopic findings. He endeavored to demonstrate the existence of the so-called *Magenstrasse* (gastric channel or path of the food through the stomach—the danger zone for ulcer), by giving the patient beforehand a teaspoonful of an aqueous solution of methylene blue. He expected to find only the lesser curvature and the surrounding region colored blue, but found the methylene blue equally distributed throughout the stomach. Gastroscopy should always precede an exploratory laparotomy for diagnostic purposes. He opposes the type of gastroscope in which the tube introduced is of soft rubber, much preferring the rigid type. Of 120 gastroscopies, in only two cases was he unable to introduce the gastroscope, owing to senile kyphosis preventing the passage of the instrument through the esophagus. A colored plate with nine gastroscopic views adds to the interest of the article. Maaløe's experience with 500 applications of the gastroscope was reviewed in these columns, June 11, 1921, p. 1720.

Wiener klinische Wochenschrift, Vienna

June 8, 1922, **35**, No. 23

Hypnotic Analgesia in Childbirth. H. Kogerer.—p. 513. Conc'n No. 25.
Modern Treatment of Fractures and Luxations. C. Ewald.—p. 517. Conc'n.
Experimental Hyperfeminism. J. Bondi and R. Neurath.—p. 520.
Diphtheric Colitis Following Vertebral Injuries. W. Goldschmidt and A. Muelleder.—p. 522.
Intracutaneous Gelatin Reaction in Syphilis. A. Busacca.—p. 523.
Changes of the Esophagus in Lymphosarcoma and Lymphogranuloma of the Mediastinum. M. Haudek.—p. 524.
Acute Forms of Ossifying or Deforming Affections of the Spinal Column. L. Schmidt and E. Weiss.—p. 525.
Anthroposophy in Relation to Homeopathy. J. Weiss.—p. 525.

June 15, 1922, **35**, No. 24

*Tuberculosis of Peritoneum and Genital Organs. P. Werner.—p. 535.
Cheyne-Stokes Respiration and Its Connection with Pathologic Muscular and Vascular Movements. Hess and Rosenbaum.—p. 540.
Frequency of General Paresis in Vienna Insane. Pilcz.—p. 542.
Dermotropism and Ectodermoses. B. Lipschütz.—p. 544.
Experimental Respiration in the Cadaver in Research on the Circulation. S. Jellinek.—p. 546.
F. W. Lippich's "Dipsobiostatik." O. Danzer.—p. 547.

Treatment of Tuberculosis of Peritoneum and Genital Organs.—Werner advises, if tuberculosis of the peritoneum or the genital organs is suspected, that by all means the abdomen be opened, in order that the diagnosis may be confirmed. This exploratory laparotomy must be insisted on, for, as he endeavors to show by citing several cases, the diagnosis is difficult and this is the only way to establish with certainty the tuberculous nature of the disease. If an exudative type of peritonitis is present, the accumulated fluid must be drawn off. If the fluid in the abdomen reappears later, roentgen irradiation is recommended. In the dry adhesive type, roentgen rays should be used at once. In tuberculous affections of the adnexa, large suppurating tubes should be extirpated if easily removable; if firmly embedded, they should be left and roentgen irradiation employed. In case of large accumulations of pus in the pelvis and if fever is present, the vaginal route may be indicated in exceptional instances, to be followed by roentgen irradiation. Werner is convinced that if this method of management is adopted much better results will be secured than in the past.

Zentralblatt für Chirurgie, Leipzig

May 6, 1922, **49**, No. 18

*Copper Sulphate in Actinomycosis. R. von Baracz.—p. 634.
Pseudo-Appendicitis Caused by Spasms of Small Intestine. K. Vogeler. —p. 639.
*Temporary Closure of Artificial Anus. L. Drüner.—p. 642.

Parenchymatous Injections of Copper Sulphate in Treatment of Actinomycosis.—Baracz has used copper sulphate in the treatment of 35 out of 36 cases of actinomycosis occurring in his practice during the past nineteen years, and is abundantly well satisfied with the results. Of the 36 cases, 30 affected the head and neck, two the tongue, one the lungs with metastasis to the abdominal walls, two the abdomen and one the buttocks. Of the 35 cases in which (usually 1 per cent.) solutions of copper sulphate were injected, 30 patients recovered permanently, two did not receive the complete treatment and two are still under treatment. According to the size of the infiltration, varying quantities of the aqueous solution of copper sulphate are injected, at intervals of a few days, until the infiltration begins to get soft, the time required varying according to the size, depth and location of the infiltration and the degree of malignancy of the case. The two very grave cases of actinomycosis of the abdomen ended in death.

Pad to Close Artificial Anus.—An inflatable pad between a small plate inside the bowel and a small plate above outside closes the opening completely. Of course this device is only for temporary use.

Zentralblatt für innere Medizin, Leipzig

May 6, 1922, **43**, No. 18

*The Capillary System as a Peripheral Heart. E. Kylin.—p. 297.

The Capillary System.—Kylin recalls Hasebroek's pioneer work in 1914 by which he sought to prove that the peripheral vessels (arteries, veins and capillaries) by their contractions aid the heart in its work, and contribute toward the mechanism of the circulation. Through the researches of Krogh and others we now know that the capillary system has an independent regulatory mechanism, by which the capillaries are opened and closed. Krogh showed that in the mucous membrane of a frog's tongue, for example, only a few capillaries are open under normal conditions, but by mechanical, chemical or nervous irritation the remaining capillaries can be opened to the blood stream. After a time they close again. By pressure from the arterioles, however, the capillaries cannot be opened. Kylin has been studying the behavior of the capillaries around the nail-groove in man. He concludes, also, that the capillaries by alternating dilatation and contraction help to force the blood through and thus aid the heart in its work. They would seem to constitute, in other words, a peripheral heart.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

June 3, 1922, **1**, No. 22

The Medical Profession in the Lower House. G. van Rijnberk.—p. 2136.
*Treatment of Bronchial Asthma. J. Hekman.—p. 2139.
Case of Narcolepsy. J. R. Kollewijn.—p. 2155.

*History of Epilepsy. G. C. Bolten.—p. 2156.
The Oldest Work on Dentistry; 1530. G. H. Bisseling.—p. 2170.

Asthma.—Hekman admits several forms of asthma, including that for which anaphylaxis is responsible, and that traceable to irritability of the finer bronchioles, left by some infectious process or the result of abnormal nervous influences. Tuberculosis may be responsible in some cases, and these may benefit by tuberculin treatment. In one such case ten years ago a course of tuberculin cured the asthma. He has treated twenty-two asthma patients with an autogenous vaccine, and he gives the details of four cases in which marked improvement followed. No benefit was observed in two cases. Some of the others are still under treatment.

History of Epilepsy.—Bolten cites authorities to show that epilepsy has been known from the earliest appearance of man on the earth, and he traces its history and lists a number of famous persons alleged to have had the disease.

Acta Chirurgica Scandinavica, Stockholm

June 14, 1922, **54**, No. 6

*Ankylosis of Jaws. L. Imbert and J. Cottalorda.—p. 515.
*Acute Serous Peritonitis. E. Melchior.—p. 530.
*The Circulatory Failure in Peritonitis. H. Olivecrona.—p. 559.

Inability to Open the Jaws.—Imbert and Cottalorda remark that the war experiences have completely upset the former views as to the proper treatment of constriction of the jaws. Formerly entirely surgical, it is now almost entirely mechanical. When the play of the jaws is prevented by myotonic contracture, an apparatus like O'Dwyer's jaw opener will conquer the contracture if applied gently and with increasing force. Suddenly the mouth opens as if some obstacle had been overcome, but there is no rupture; the force applied is never enough to tear the soft parts. Cicatricial constriction is also amenable to mechanical measures, spreading the jaws apart with a clothes-pin or other device, repeating the stretching perseveringly day by day. The trunk of the facialis nerve crosses the condyle and is thus in the way when bony ankylosis requires operative treatment. The nerve can be drawn up out of the way with the soft parts if the straight incision is made from 2 cm. below the middle of the tragus, slanting to the lower margin of the horizontal ramus. A retractor on each side, perpendicular to the incision, gives ample access to the bone. A raspatory, working from below, separates the periosteum from the bone. The condyle is not enucleated, but the neck is resected; muscle tissue can be interposed to prevent recurrence. It may be necessary to resect the condyle on the sound side, but systematic mechanotherapy is indispensable after any such operative measures. He says that this new operative technic will correct the most inveterate cases of constriction of the jaws. The article is in French and is illustrated.

Acute Serous Peritonitis.—Melchior refers to idiopathic peritonitis with effusion as a primary affection. In a case described, an acute three day fever and symptoms of progressive peritonitis in the girl of 15 were not explained by the laparotomy. Except for the abundant effusion the abdominal findings were negative, but the fever dropped at once after the operation. In this and in nine similar cases the laparotomy had been done on the assumption of acute appendicitis, but the appendix was either sound or showed such slight chronic changes that it could not possibly be incriminated for the clinical picture. The effusion was limpid and the laparotomy was always followed by prompt recovery. The age was between 12 and 15 in five, and the oldest in the group was 24. There was nothing to indicate polyserositis in any instance. In another group of three cases the clinical picture and findings were the same except that a mild ovarian affection or appendicitis or ectopic pregnancy might have explained the condition. He has found in the literature only one instance of this nonspecific peritonitis with effusion. This was a case reported by Langemak, the peritonitic symptoms and effusion following an acute gastro-enteritis in a boy of 14 with osteomyelitis. On account of the difficulty of excluding appendicitis, operative treatment is generally indicated, and it always benefits although isolated peritonitis acuta serosa otherwise does not call for intervention. The article is in German.

The Circulatory Failure in Peritonitis.—The extensive experimental research described in this long article (in English) was done at the Physiology Institute at Stockholm. It demonstrated that in peritonitis the volume of blood circulating effectively is reduced because the capillaries dilate. The blood stagnates in them, and the plasm seeps through the capillary walls. The heart is not to blame. The measures in vogue to combat the circulatory failure in peritonitis are based on incorrect premises. We should aim to act on the capillaries. To date, the best means for this seems to be transfusion of blood, the same as in shock and hemorrhage. This commendation of transfusion of blood as the most rational treatment of the circulatory disturbance in peritonitis is Olivecrona's final conclusion from his research, but he adds that this suggestion must be tested experimentally before any definite opinion can be expressed.

Hospitalstidende, Copenhagen

June 10, 1922, **65**, No. 21

*Roentgenoscopy in Ileocecal Tuberculosis. P. Flemming Møller.—p. 333.
Present Status of Bismuth Treatment of Syphilis. H. Haxthausen.—p. 342.

June 30, 1922, **65**, No. 26

Case of Poliomyelitis with Landry's Paralysis in Adult. K. Winther.—p. 413. Cont'd.
Experimental Research on the Functions of the Labyrinth. R. Lund.—p. 425. Conc'n.

Roentgenoscopy in Ileocecal Tuberculosis.—Møller refers to Stierlin's statement that, with ileocecal tuberculosis, the contrast suspension is passed along through this segment of the bowel so rapidly that this segment does not cast a shadow, while the bowel above and below is entirely opaque. Møller has been unable to confirm his statement, and only seven cases are on record in which this Stierlin symptom was pronounced. Møller noted in a case of advanced ileocecal tuberculosis that the Stierlin symptom observed at first subsided later, although the disease continued a progressive course.

Ugeskrift for Læger, Copenhagen

June 15, 1922, **84**, No. 24

*Crippling with Arthritis Deformans. T. Nielsen.—p. 693.

Correction of Crippling of the Knee from Polyarthritis Deformans.—Nielsen remarks that no joint induces such a degree of crippling as contracture of the knee. In his 109 cases of chronic polyarthritis deformans there was contracture of one or both knees in 41, including 13 with extreme crippling from the inability to extend the knee. The necessity must be impressed on the patient from the first to ward off contracture by frequent flexing and extending of the knee. He must be warned in particular against the use of a cushion under the knee. In three of Nielsen's severest cases the use of a cushion under the knee for weeks and months as the patient lay in bed was evidently responsible, and this was in a hospital. Balneotherapy and mechanotherapy, with gentle massage, are also useful in warding off crippling of the knee. With these measures he succeeded in arresting the course of the crippling in all the cases, and improved many. When the contracture was purely muscular, the cure was often complete, but in 3 rebellious cases of extreme contracture of one knee, with normal hip joint, he resected the bone, with ideal results. He gives the details of these cases and cites Hildebrandt's 4 recent successful cases. In 19 compiled from the literature, amputation became necessary later in one case, and one patient died. In 7 cases he applied *redressement forcé* in one or more sittings, under deep anesthesia, and obtained highly gratifying results in all but one case. This exception was a young woman who developed gangrene in the foot after the forcible correction of the deformity. The after-treatment with *redressement forcé* is of prime importance, and it is possible only in a sanatorium equipped for the purpose, like the one in his charge. He adds that no one else advocates *redressement forcé*, and he is very careful not to carry the correction to overextension. Immobilization for two or four weeks must follow, and this must be succeeded by physical treatment, with daily extension, to prevent a relapse. He does not attempt to correct the contracture of the knee if the hip joint is badly diseased.